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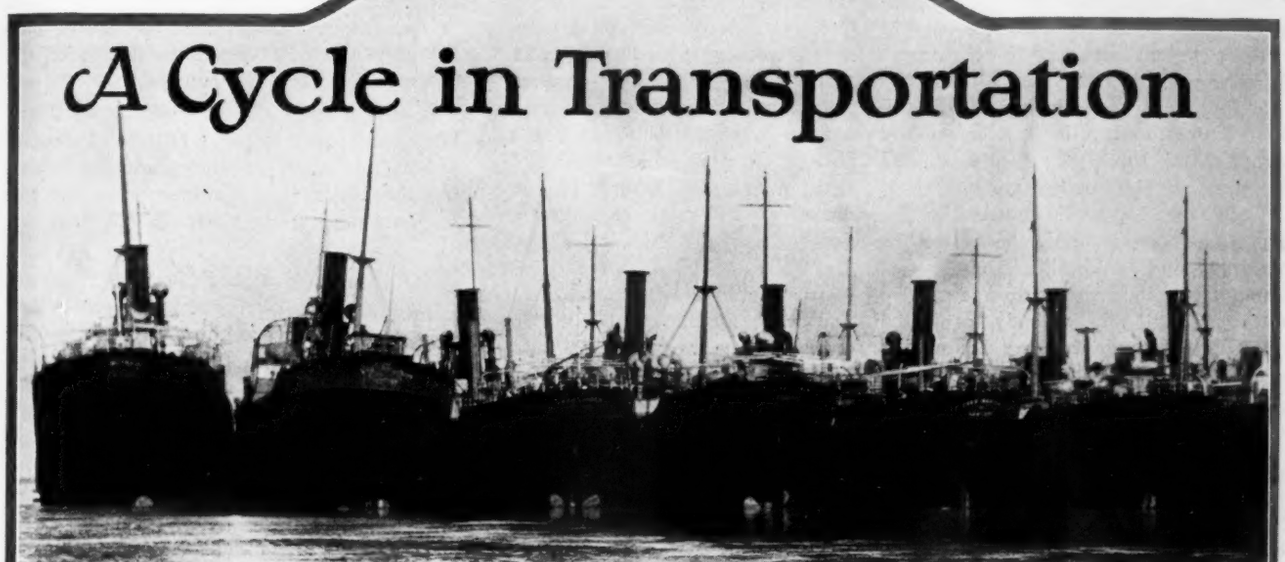
A Cycle in Transportation



How Ford Scrapped Surplus War-built Ships and Reclaimed Material for Land Service

Part II—Disassembly Line Set Up for Ships

PREPARATIONS for the major dismantling operation at Fordson were carried on simultaneously with the experimental work on the LAKE FONDULAC. Lessons learned in taking the ship apart were promptly applied in the designing of the tools, the establishing of methods and the training of men. Different portions of the ship presented different problems; the superstructure required one type of work, the plumbing another, the bulkheads another, the machinery another.

Mastery of a certain problem did not mean that work on that problem ceased. Nothing was ever considered unchangeable. Ways for doing a thing better were continuously being tried; if the new way proved more efficient than the old, the old was immediately abandoned. This was true not only in scrapping the LAKE FONDULAC but throughout the whole dismantling operation. Methods were constantly being changed and improved.

Work on the LAKE FONDULAC was started the day after the vessel arrived in Fordson. It ended June 15, 1926, when the last ship-bottom section was hauled to the storage yard. Dismantling the LAKE FONDULAC took 180 days. Dismantling the second ship took 29 days. By the end of the summer three ships were being taken apart every five working days. Many novel experiments were tried on the LAKE FONDULAC. The combined force of cranes and powerful hydraulic rams was first used to rip the deck plates from the beams. The rams exerted pressure from underneath while the crane falls, hooked to a corner of the deck plates, tugged from above. The decks were peeled off easily enough by this method, but the plates were left jagged and distorted, and were difficult to handle later in reducing them to charging-box size.

A special-designed roller cutter or shear was used in slitting the side plates of the LAKE FONDULAC. Suspended from a crane, it was lowered

over the edge of the side plates to take its "bite" and pulled upward. After each cut the shear was lowered again until a stop rested against the lower edge of the cut, when it was in position for the next bite. The shear was housed in a compact frame which guarded its vulnerable parts against breakage, and its smooth contour prevented it from catching on projections while being handled.

Hook knives attached to the crane falls were also used for slitting the hull side plates vertically. Both the hook knives and roller cutter worked well, but the torch was finally adopted for most of the cutting work.

With the LAKE FONDULAC in the process of dismantling, the plans for building and equipping the special dismantling dock were rapidly carried out. A boat slip already projected from River Rouge turning basin half a mile into the Fordson plant yards. On one side of this was the ore dock, backed by the storage bins, the great blast furnaces, the coke ovens and the cement plant.

Along the other side the new dock, approximately 2200 feet long, was constructed. Space was allotted for ten ships in line. Pipe lines, for gas, oxygen, steam, compressed air and water were buried in trenches along the dock.

Three sets of railroad tracks and a set of widely spaced rails including a third rail for gantry cranes were laid down. Feeder tracks were built to the open-hearth furnaces and to the different storage sectors.

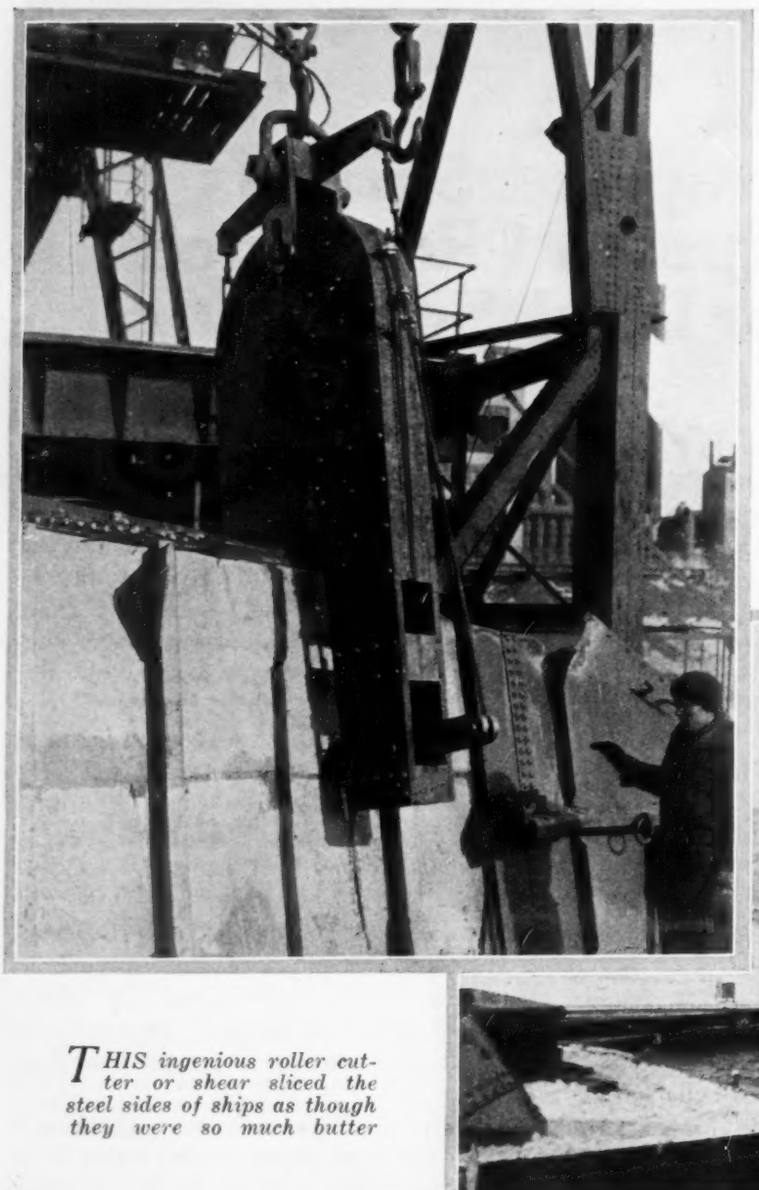
A mammoth locomotive wrecking crane of 200 tons capacity was ordered from the Industrial Works of Bay City, Mich., at a cost of $73,300. It was mounted on two 6-wheel trucks, and was capable of easily lifting an entire engine, weighing 75 tons, or a boiler weighing 50 tons from its foundation in the ship's hold and placing it on a specially built flat car.

The crane was operated by steam. Its weight ready to operate was 366,000 pounds. This necessitated driving 88 piling into the ground and tying them together with concrete for the foundation inway of the dock at the point where the crane operated. Each piling was estimated to hold a load of 25 tons. There was a maximum reaction at the end of the center outrigger, 13 feet from the center of the crane, of 350,000 pounds.

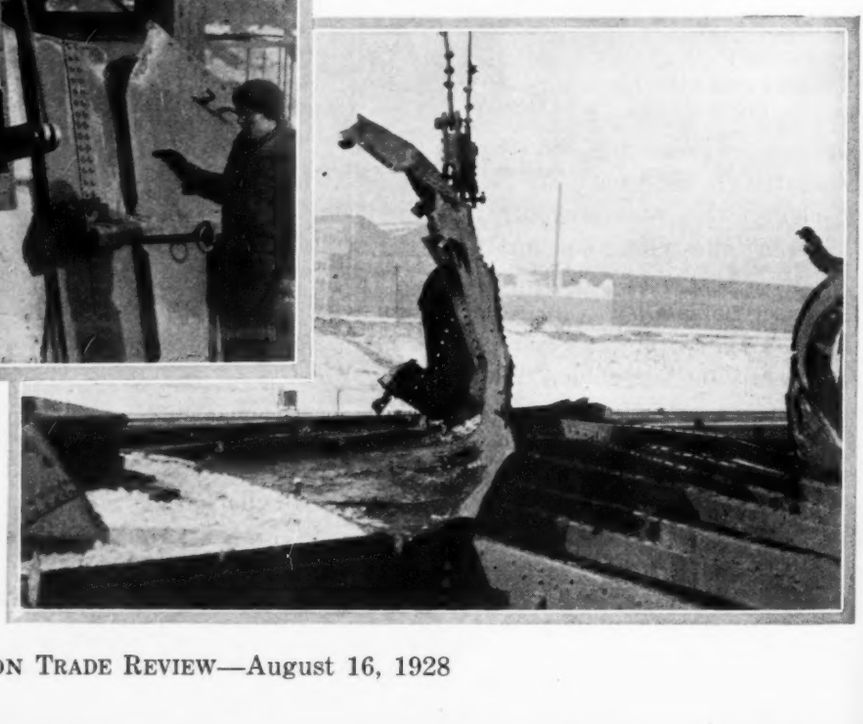
As the crane traveled on standard gage track, it could be moved readily to any part of the plant to unload the boilers and engines from the flat cars and place them in position for storage.

It was designed for the heaviest class of railroad wrecking service and provided the maximum lifting capacity obtainable in the locomotive-type crane. It was equipped with Westinghouse air brakes, telescopic outriggers and was fitted with a boom 50 feet long to the main hoist pin with an 8-foot extension to the auxiliary hoist pin. The lifting capacity with outriggers in place was 200,000 pounds at a 30-foot radius and 160,000 pounds at a 35-foot radius.

Four 60-ton standard gage locomotive-type cranes were ordered from the McMyler-Interstate Co. at a cost of $105,260. Each crane had a 60-foot lattice boom. Air brakes were applied on all eight wheels and there were special combination beam and roller type outriggers. The lifting



PEELING deck plates off the LAKE FONDULAC *with a crane and falls. This method was found to leave too many jagged edges and tore off sections difficult to charge in the open-hearth furnaces*



THIS ingenious roller cutter or shear sliced the steel sides of ships as though they were so much butter

LAKE FONDULAC, *test scrapping ship, with midships removed, permitting boilers and engines to be lifted out*

capacity for a 16-foot radius was 120,000 pounds; for a 25-foot radius, 74,000 pounds; and for a 60-foot radius, 20,000 pounds, in each case without outriggers.

Five gantry-type cranes were ordered from the American Brown Boveri Electric Co. at a cost of $8000 apiece. They were 35-ton, 8-wheel, 5-motor, variable radius cranes with main and auxiliary hoists and traveling and rotating superstructure. The capacity was 35 tons at a 20-foot radius and 15 tons at a 55-foot radius, while the auxiliary hoist capacity was three tons.

The cranes were of the customary shipyard type, each equipped with two 85-horsepower 550 revolutions per minute direct-current motors and three 25-horsepower 725 revolutions per minute direct-current motors.

Instead of a marine railway it was decided to have a floating drydock for handling the ships in the final stage of dismemberment. The drydock was built to order by the Great Lakes Engineering Works. Its weight was approximately 500 tons and its lifting capacity was an equal amount.

The drydock was built in one section, the length of the pontoon being 250 feet, depth 5 feet, length of side walls 150 feet, width of side walls 5½ feet, and depth of side walls 12½ feet. It was built of 12½-pound steel plate throughout with transverse floors of 14-pound plate every 25 feet.

There were three lines of trussed longitudinals on each side of the center keelson. The framing was on the transverse system and was of 3 x 5 inches by 9.8-pound angles spaced 30 inches. Seven lines of concrete girders ran longitudinally on the deck of the pontoon spaced 6 feet apart; each concrete girder was 17 inches high and 12 inches thick and was for support to the bottom of the vessel when docked.

Four centrifugal pumps were installed in the side walls on one side of the dock, where they could be controlled easily. They were driven through vertical shafts by 5-horsepower motors installed on top of the side walls. The suction side of each pump was connected to a cast-iron header having two 6-inch suction lines leading to the pontoon on each side of the center keelson. The pontoon was divided into 12 water-tight compartments.

Drydock Operated Speedily

An 8-inch filling valve was also connected to each header. There was a 6-inch valve on each 6-inch suction line on the pump discharge and an 8-inch valve on the filling side of the header. The stems of these valves were carried through the depth of the side wall to stands 20 inches high with hand controlled wheels. Connections were provided on headers at each end of the dock for air, gas, oxygen, and electric power.

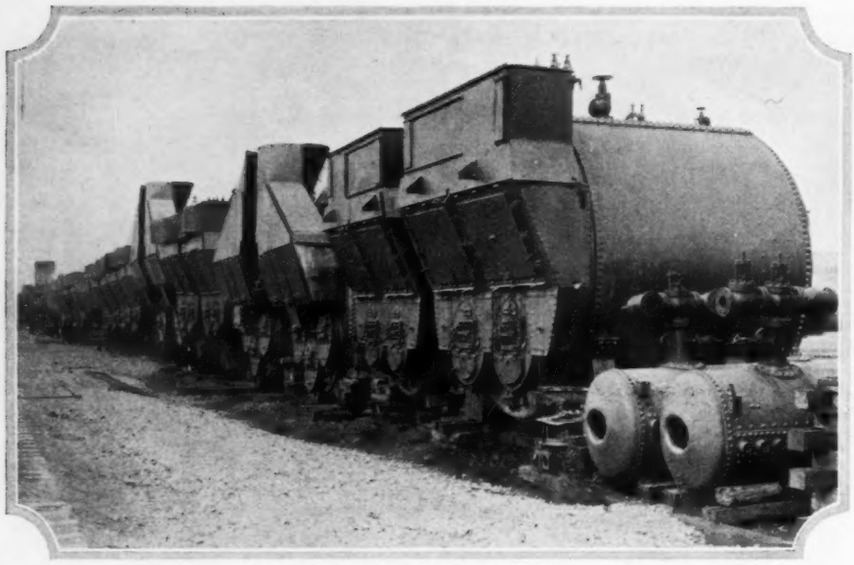
It took approximately two hours to sink the dock to the 4-foot level, and an hour and a half to raise it with one of the ship bottoms in it. Once the dismantling job was well under way, the drydock was operated with unusual speed. By the time the last ship piece was hoisted off, the dock would be partially submerged and as soon as the new hull bottom appeared out of the water the men would be working on it.

The drydock was so constructed that it might be rebuilt to handle commissioned ships within its capacity, by adding approximately 30 feet in length to the side walls and 10 feet in height.

The first torch cutting on the LAKE FONDULAC was done by the customary oxyacetylene method, bottles of oxygen and acetylene being used. This was unsatisfactory from many angles; cost, uncertainty of supply, awkwardness, etc. Experiments soon resulted in the substitution of coke oven gas for acetylene. This insured a continuous plentiful supply from the company's own coke ovens at a materially lower cost.

An oxygen plant capable of producing 2000 cubic feet of oxygen per hour at a purity of 99.5 per cent was then installed in the 14-inch steel mill building. The manufacture of oxygen consists of extracting oxygen from the air by the liquefaction process, the nitrogen being allowed to evaporate.

The oxygen plant consisted chiefly of the following items: Two steel low-pressure purifying towers; one 4-stage compressor; one steel solution mixing tank; one steel oil separator cylinder with valve; one air drying and purifying battery consisting of eight high-pressure seamless drawn steel cylinders, on steel high-pressure air filter cylinder; one rectifying column constructed of an outer steel shell with spiral copper coils; one thawing coil and steel container; one oxygen meter for a maximum flow of 2500 cubic feet per hour; one gas holder with capacity for 1500 cubic feet of oxygen constructed of 3/16-inch steel braced with 2-inch angles; one high-pressure oxygen compressor to compress 3500 cubic feet of oxygen to 150 atmospheres; one charging manifold of 20 connection with control gage, check valve, shut-off valves and connecting pipes of high pressure copper construction; and the piping,



Many of these marine boilers shown here in stock at Fordson have been put to use in various Ford plants

valves, fittings, gages, and safety devices necessary for proper operation.

To reduce the large ship-bottom sections, weighing approximately 10 tons, to charging-box size for the open-hearth furnaces was a problem in itself. Cutting the sections by torch would be slow and expensive. Therefore a 1000-ton steam shear—the largest in the world—was ordered from the Morgan Engineering Co. Five additional shears were ordered for cutting the smaller steel.

The slag disposal dump was near the site of the new dock; this had to be moved.

Roadways were constructed along the dock and through the various storage sectors.

A 10-ton magnet crane was installed in the open-hearth building to handle the furnace scrap. Electric power lines were laid for lighting and equipment.

Winches were installed for moving the boats.

Many minor details had to be attended to; tool cribs, time clocks, first aid, drinking water, telephones.

Before the LAKE FONDULAC was completely scrapped two new ships, the LAKE ELIZABETH and LAKE FRENCHTON, had arrived. With them the major dismantling job got under way.

Eastern shipyards chosen for the dismantling of the submarine-type vessels were the Federal Shipbuilding & Drydock Co., at Kearny, N. J., the Sun Shipbuilding & Drydock Co., at Chester, Pa., and the Southern Shipyard Co., at Newport News, Va. The work in the East started at Kearny, Nov. 18, 1925, with the OPEQUAN, a ship which had made five trips to South America in the 18 months of its active service before it was anchored in the "laid-up fleet."

By June 5, 1926, when the last part of the OPEQUAN'S hull had been cut to cargo size, a dozen more boats were in the process of dismantling at the three yards. The LAKE CANDELARIA, second to go to the scrapping dock, was the only laker taken apart on the Atlantic coast. It was an experimental ship. Work on it started Nov. 24 and ended Feb. 26. It was followed at Kearny by the ALAMOSA, the ASABETH and the MOOSEHAUSIC.

At Newport News the BRASHER was the first ship torn down. It was scrapped in 62 days, going to the dock Jan. 18. The next ship, the LORDSHIP MANOR, required almost twice that time. It went to the dock a week after the BRASHER and was not completed until May 19.

The dismantling got under way at Chester Jan. 12 with the CHARLOT, to be followed by the DAVIDSON COUNTY, the BAYHEAD and the SHORTSVILLE. Cutting the CHARLOT apart took 106 days; the next vessels required 106, 95 and 97 days. During the summer unusual speed was made with some of the ships at Chester, the MARGUS being scrapped in 54 days, the LACKAWANNA VALLEY in 53, the OPELIKA in 50, and the MONOMAC in 48. The average time at the three eastern shipyards during the first year was 94 days.

The submarine-type boats were single screw steamships with a straight stem and elliptical stern. They were 335 feet 6 inches in length over all, 324 feet in length between perpendicu-

(*Concluded on Page* 420)

No wonder ship scrapping has been listed as a most harzardous vocation. Ford methods were devised with the safety of workmen paramount

Stainless Steels Have Many Uses in Protection Against Corrosion

Consumption of These Materials Has Increased 600 Per Cent in Last Three Years—Most Commercial Forms Available

By J. C. C. Holding

CORROSION has been one of the problems of industry since time began. The waste and monetary loss from this cause has been estimated at $2,500,000,000 per year. In addition to the actual cost of deterioration from corrosion, the annoyance and inconvenience, to say nothing of the actual danger to human life, are also of pre-eminent importance.

The retarding of corrosion of iron or steel by the addition of other metals to its composition has been recognized for many years and some alloys having marked resistance to corrosion were discovered a long time ago. These alloys are by no means noncorrodable and, furthermore, do not have the chemical and physical properties suitable for all purposes. There was and is, therefore, an immense field for a steel alloy which possesses the property of strong resistance to corrosion throughout its molecular structure, and at the same time, retains the physical properties and the workability of ordinary steel.

Such a material is now available in the alloy known as stainless steel. The use of stainless steels and irons, during the past 10 or 12 years and more particularly the last three or four years, has developed many practical properties and characteristics of the two distinct and, more or less standard grades; namely, (1) The one of the type composition carbon approximately 0.30 per cent—chromium 12 to 14 per cent, known commercially as stainless steel; and (2) the one of the type composition carbon, 0.12 per cent and under and chromium 12 to 14 per cent, commercially known as stainless iron.

The first type is the original stainless cutlery steel as discovered by Harry Brearley. Its corrosion resisting properties, when poperly hardened and free from scale, are remarkably perfect. It will effectively defy corrosion when subjected to moist air, water, perspiration, blood, antiseptics, nitric and nitrous acids, vegetable and mineral oils, mine water, steam, alcohol, ammonia and other alkaline solutions, gasoline, soap, mercury and many other organic and inorganic chemicals. However, it will not resist the action of hydrochloric, sulphuric, sulphurous and hydrofluoric acids. The physical properties of this grade vary with different forms of heat treatment, but since the material is most usually used when fully hardened, its properties in this condition only need be discussed.

Its tensile strength, speaking typically, is approximately 260,000 pounds per square inch. Its elastic limit, 225,000 pounds per square inch. Elongation in 2 inches is 11 per cent; reduction of area, 32 per cent. Brinell hardness is 512. It is seldom necessary to weld this grade to itself and, therefore, its welding properties are relatively unimportant. However, such welding can be accomplished with care and special attention to prevent oxidation. It is entirely practical to weld this type of stainless steel to ordinary carbon steel, a process which is in common practice in the manufacture of table cutlery, where the blade is made of stainless steel and the tang on which the handle is mounted is ordinary carbon steel. Brazing and soldering of this type are also satisfactorily accomplished, but must be carried out with care.

Material Can Be Forged

The cutlery manufacturers are demonstrating every day that stainless cutlery steel can be forged by using the same general methods that are used for forging high-speed steel. The technique of this form of fabrication is usually worked out by each fabricator in the light of his own experience gained through experimental work in his own factory. The same is also true of subsequent heat treatment to produce certain definite desired results. It is often stated that stainless steel cutlery will not hold an edge and it certainly is true that much of this cutlery on the market does not hold its edge. However, the success of some manufacturers in producing stainless steel knives, with an extremely satisfactory cutting edge, is sufficient proof that it can be done. Many manufacturers do not realize that stainless steel cannot be treated exactly as carbon steel and that extensive experiments may be necessary in his own factory, with varying compositions and varying temperatures in his treatment processes, to determine exactly the details of handling to produce the results desired.

The second type of material known commercially as stainless iron has a much broader application in industry and is the grade in which the tonnage produced has shown the largest growth in the past several years. This material, even in the annealed condition, is highly resistant to the most common corrosive agents, such as sea water, fresh water, mine water, steam, carbonic, nitric or nitrous acids, alkali solutions, gasoline, blood, perspiration, sour milk, alcohol, ammonia, mercury, soap, sugar solutions and hot oil. As in the case of cutlery steels hydrochloric, hydrofluoric, sulphuric and sulphurous acids, either in a pure, concentrated or dilute solution, will attack the material. The presence of the common impurities found in commercial acid solutions, however, seems in many cases, to minimize this attack so that frequently stainless iron is found to offer satisfactory resistance to these reagents in their usual impure forms.

The physical properties of stainless iron render it a most valuable construction material aside from its stainless properties. For instance, its tensile strength at room temperature is approximately 80,000 pounds per square inch, or very considerably higher than that of ordinary mild carbon steel. Its elastic limit also is proportionately higher than for mild carbon steel.

One of the remarkable physical characteristics of stainless iron is the fact that it retains, to a marked degree, its high physical properties at elevated temperatures, making the

From a paper presented recently before the St. Louis chapter of the American Society for Steel Treating. The author, J. C. C. Holding, is manager, American Stainless Steel Co., Pittsburgh.

material particularly serviceable in many industrial applications where tensile strength at high temperatures is essential.

The extreme toughness of stainless iron makes it a valuable engineering material when high tortional properties are required. The uses to which it is often put frequently require welding. This cannot be done by the blacksmith forge method. However, the material can be satisfactorily welded by the electric or gas processes, provided certain precautions are taken. The weld must be protected from the air to prevent oxidation. This can be done but requires care and the development of a special technique on the part of the operator. Welding rods of the same composition as the metal being welded should be used.

Weld Must Be Annealed

Since stainless iron will air harden, it is necessary to anneal the weld in order to restore its softness. In the case of comparatively small fabricated articles, this can be done by annealing the entire job, but for large work the weld alone may be reheated to a dark cherry red and allowed to cool in the air. Brazing of stainless iron is readily accomplished with tobin bronze, by means of a suitable brazing flux. This work should be done at a temperature where the bronze flows sluggishly. Spot welding requires no special precautions.

Because of its toughness, stainless iron machines more slowly than ordinary steel, and speeds and tools must be adjusted accordingly. Automatic screw machines will turn out material without difficulty but, of course, the usual speed must be reduced. When making pressed sheet steel products of stainless, the same toughness and high physical properties require adjustment to be made in pressures and die clearances.

Many times the question is asked whether stainless iron can be used in products where deep drawing or spinning are required. The answer is always yes, but again this answer cannot be made without reservations and qualifications, because in order to produce maximum softness, stainless iron must be carefully annealed.

One of the characteristics of stainless iron, which makes it a very valuable engineering material in certain fields, is its comparative freedom from scale when heated to high temperatures. By scale is meant the heavier scale which actually causes the disintegration of ordinary steel under continuous heating. Stainless iron will lose much less weight under conditions which ordinarily cause scaling than steel of straight carbon content.

The specific gravity of stainless iron is slightly less than that of ordinary steel. The electrical resistance is somewhat higher than that of ordinary steel. Its coefficient of expansion is slightly lower than that of ordinary steel, making it suitable for working parts in machinery which are subject to the contracting and expanding effects of heat, such as valves. While this difference is only slight, it is sufficient to be of considerable advantage in engineering design. The best magnetic properties of stainless steel and iron are brought out when it is hardened. However, aside from their corrosion and stain resisting advantages, these metals do not compare favorably with the usual chrome and tungsten magnet steels.

The thermal conductivity of the material is comparatively poor, being only about one-third that of iron. Its melting point is approximately 2700 degrees Fahr. considering the melting point as the temperature at which the liquid metal first begins to solidify. However, the solid steel will begin to break down at a temperature about 200 degrees lower. The modulus of elasticity is in the vicinity of 30,000,000 pounds per square inch and is not noticeably different from that of ordinary steel.

As indicated at the beginning, table cutlery was the first product to benefit by the use of stainless steel. While at first it was difficult even to get a cutler to try it out, today there is scarcely a high-grade cutlery manufacturer who is not putting out at least a part of his production in stainless steel. This cutlery can be purchased generally and is no longer a curiosity.

It is said that in England 75 per cent of the cutlery sold is made of stainless steel while in the United States the proportion to date has attained only 25 per cent. This 25 per cent, however, has come into existence in a very few years, the growth being most rapid in the past five years.

The cooking range is an essential part of the kitchen equipment and the stainless oven is proving popular. There is no dirt, no scale, no constant brushing out and laborious cleaning of these ovens. Stainless ovens are now most common in electric ranges, but gas range manufacturers are experimenting with them.

Stainless Utensil Sales Gain

The day of the pot being able to call the kettle black is surely passing also with the increased sales of stainless steel cooking utensils, such as frying pans, sauce pans, kettles, etc. These articles have been on the market and available since Nov. 6, 1926.

What has been said relative to the home kitchen is equally true with regard to the hotel and restaurant kitchen, but even on a larger scale because in a hotel kitchen there are warming tables, cook's tables, shelving, sinks, dishwashers, serving trays, etc., which the home kitchen does not need but which are just as beneficially made of stainless steel and stainless iron as the smaller tools with which we are familiar in our homes.

Stainless implements used by the sportsman are numerous; one of these being the stainless steel golf club. This article first made its appearance in commercial quantities May 21, 1926, Since that time, the majority of manufacturers are offering stainless steel clubs.

Stainless Gun Barrels Made

Winchester Repeating Arms Co., New Haven, Conn., was the first manufacturer of shotguns and rifles to place upon the market its products with stainless steel barrels. These made an instant appeal to hunters because they do not have to be cleaned immediately after using to prevent the serious corrosive effects of powder gases and stormy weather. Even after standing untouched indefinitely such guns and rifles clean easily without showing pitting or other damage.

Fishing rods and reels of stainless material will probably be the next big development in the sportsmen's equipment. Hunting knives, axes and such similar outdoor implements are, of course, obtainable and more satisfactory in stainless steel.

One of the outstanding engineering applications is in connection with the oil industry. Crane Co., Chicago, first recognized the adaptability of stainless iron to the mountings of valves for oil refinery equipment. The water pump shaft in practically every automobile motor is made of stainless steel or stainless iron, this application having relieved motor designers of the serious annoyance of corroding shafts and leaking pumps. Other motor parts subjected to the influence of exhaust gases are also made of stainless material.

While no automobile manufacturer has used polished stainless steel radiator shells, lamps and other bright parts, all these polished parts might be made of stainless steel which is permanent in finish, needing only to be wiped off to remove the dirt, eliminating all necessity for polishing and insuring a new appearance to the car throughout its life.

In passing, it might be said that with the present tendency of the

public taste for highly ornate cars, it is logical that not only radiator shells and lamps could be made of polished stainless material, but also bumpers, disk wheels, windshield frames, kick plates, running board trim, instrument panels, steps, robe racks, steering wheel spiders, etc.

Such articles as carpenters' squares, saws, chisels, hammers, building hardware, curling irons, toasters, roller skates, ice skates, sporting goods, cutlery and so on indefinitely, can be made of stainless material and should enjoy good consumer demand.

Mention was made of the industrial field but to be more specific, might be cited stainless steel pressure tanks, digestors, and similar equipment now being extensively used by the DuPont company, and the Atmospheric Nitrogen Co. in the manufacture of nitric acid. Stainless steel and iron are highly resistant to nitric and nitrous acids and, therefore, lend themselves well to the requirements of this particular industry.

Another illustration of the application of stainless material to industrial equipment is in the dairy field where countless tanks, coolers, bottling machines, weigh cans, butter and cheese tryers and other dairy equipment are increasingly being made of stainless steel and iron.

Commercially there is little to be said regarding raw stainless steel entering into the multitude of products for which it is suitable, but attention should be called to the fact that the material is now being produced by the 26 licensed steel mills and foundries and is being imported from abroad under license agreement with the American Stainless Steel Co. from five mills. It is possible to obtain stainless steel and iron in most of the commercial forms in which ordinary steel is obtainable, such as hot rolled bars, plates, shapes, sheets, cold drawn bars, hot and cold rolled strip, tubes etc. Consumption is growing rapidly having increased 600 per cent in the last three years.

In 1617 Sir David Bulmer invented a machine for cutting nail rods.

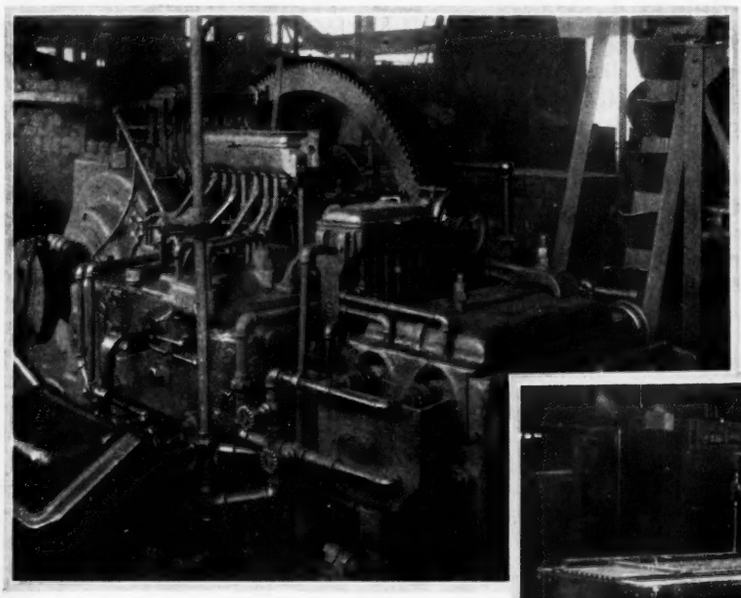
Connecting Rod Bolts Are Produced Rapidly

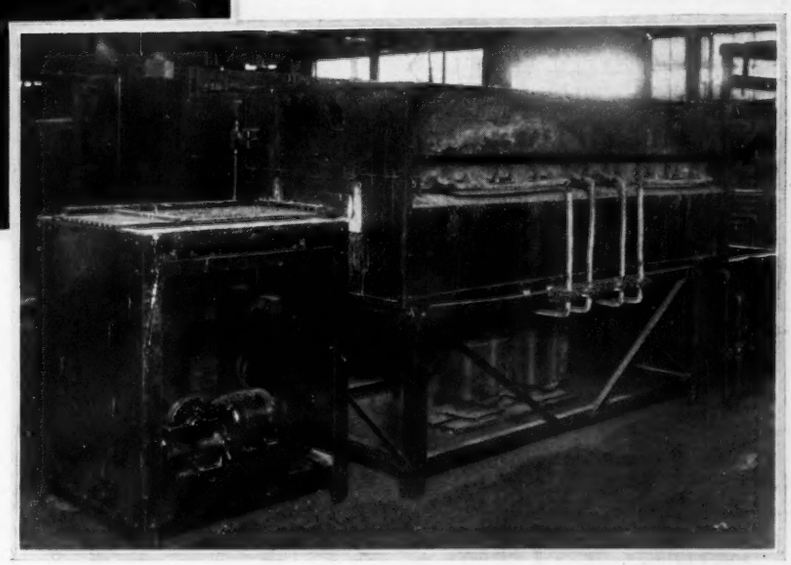
CONNECTING rod bolts used in the various automobiles manufactured by Dodge Brothers Inc., Detroit, are forged in the company's main plant. The raw material is chrome-vanadium steel rounds with a carbon content ranging from 0.30 to 0.35 per cent. The material is purchased from a regular source of supply in 18-foot lengths and with a diameter of 0.385 inch. The bar stock is heated to 1400 degrees Fahr. in an oil-fired furnace which is equipped with automatic temperature control.

When at the desired temperature, the bars are fed singly by pinch rolls into a forging machine which forms the head and shears the bolt to specified length at a production rate of 92 pieces a minute. The headed bolts fall into the buckets of a continuous operating conveyor which discharges them into a stock box. This container and its contents later are transferred to the heat treating department by an electric truck.

The heat treating furnace is designed with two zones, each being individually equipped with thermostatic controls to supply more heat to the work immediately after it enters. On the hearth of the furnace are ten grooves in which the bolts are placed end to end. When the grooves are loaded a bar, operated by a motor, pushes the charge into the furnace.

In the furnace the bolts pass through ten chrome-nickel alloy tubes. As the atmosphere within the tubes is neutral there is no tendency for the bolts to scale while in transit through the furnace. As the heated bolts emerge at the rear they enter the quenching oil bath without exposure to the air, thus reducing the tendency toward scale formation to a minimum.

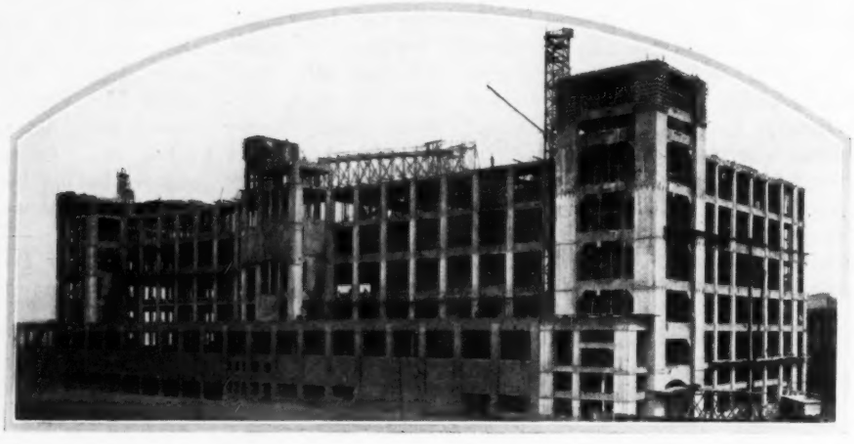




(Upper left)—After being headed in this machine, the bolts drop into buckets of a continuous conveyor and are discharged into a stock box. (Lower right)—The bolts are heat treated in this electric furnace and, as they emerge, are quenched in oil without exposure to the air

Illinois Leads States in Concrete Bar Consumption in First Half

Weekly Awards of IRON TRADE REVIEW form basis of first semiannual analysis



The first survey of concrete reinforcing bar consumption by states

Five States Take 83 Per Cent of Tonnage Placed for Buildings and Bridges

By Robert T. Mason

CONSTRUCTION of large buildings, bridges and piers, requiring heavy tonnages of concrete reinforcing bars is concentrated in a few states having densely populated cities. The first semiannual survey of concrete reinforcing bar distribution reveals the dominance of Illinois in consumption of that product. This analysis is based upon the tabulation of concrete bar awards inaugurated and developed by IRON TRADE REVIEW, and appearing each week in this publication.

Seven states, headed by Illinois, Ohio and New York, accounted for 83.58 per cent of the total of 190,436 tons of awards in the first half of 1928. Following is the order of the leading consuming states in that period:

	Per cent of total
Illinois	27.70
Ohio	12.93
New York	12.24
California	9.89
Pennsylvania	9.07
Massachusetts	6.26
Washington	5.49
All other states	16.42
	100.00

Thirty-three states and the District of Columbia are included in this analysis, these states having projects requiring 100 tons or more each of concrete bars. Many of the states not mentioned in the following list probably had an aggregate of concrete bar consumption of better than 100 tons. IRON TRADE REVIEW, however has established 100 tons as the minimum at which construction projects become of a major nature. As such, these data are more to indicate general consumption than to be regarded as definite figures showing actual distribution of reinforcing concrete steel among various states.

Illinois led the field with 112 projects taking 52,748 tons. Pennsylvania had 72 contracts with a total of 15,375 tons. Ohio with only 39 projects, ranking fourth, was second in tonnage, due largely to heavy contracts placed in Cleveland. The number of projects placed in the first half of 1928 and tonnage involved by states follows:

	Jan.-July, 1928 Number of projects	Tonnage
Alabama	2	256
Arizona	1	263
Arkansas	1	600
California	43	18,838
Colorado	2	380
Connecticut	6	2,400
District of Columbia	2	580
Georgia	3	300
Illinois	112	52,748
Indiana	2	760
Iowa	3	1,150
Louisiana	2	850
Maryland	12	2,660
Massachusetts	18	11,935
Michigan	1	250
Mississippi	3	625
Missouri	23	4,685
New Hampshire	1	300
New Jersey	21	9,380
New York	55	23,320
North Carolina	4	707
Ohio	39	24,635
Oregon	6	1,302
Pennsylvania	72	15,375
Rhode Island	3	500
South Carolina	2	420
Tennessee	1	150
Texas	3	1,975
Utah	1	155
Vermont	1	100
Virginia	2	750
Washington	38	10,461
West Virginia	5	450
Wisconsin	4	1,176
Totals	494	190,436

Of the 190,436 tons placed in the first half, a total of 25,127 tons was reported as being rail steel. Most of this tonnage was placed in the Chicago district where rail steel reinforcing bars have been used widely. Most of the tonnage listed for Connecticut consisted of mesh for roadwork.

The largest reinforced concrete projects closed in the first half of 1928 included a number taking 2000 tons or more each of steel. The heaviest was the drainage improvement for district No. 23, Los Angeles, the first contract awarded taking 5257 tons, and the second 1220 tons, for a total of 6477 tons. The Merchandise Mart in Chicago was the second largest, requiring 6000 tons of steel. Union Terminal development work in Cleveland was the heaviest consumer, taking 8800 tons, although for different uses, 4500 tons being for foundations of viaducts and 4300 tons for substructure and superstructure of various units.

Sears, Roebuck & Co., Chicago, also were heavy buyers of reinforcing steel in the first half, placing contracts for a number of stores, the largest of which, for the Park Square district of Boston, required 5000 tons. The Eighth street viaduct in Cincinnati required 3668 tons in the first contract, and 900 tons additional. The fourth unit of the Chicago sewage treatment works at Stickney, Ill. involved 4000 to 4500 tons. Other large projects and the tonnage involved were: Campbell Soup Co. plant, Chicago, 3000 tons; power house at Penns Grove, N. J., 2000 tons; stock and export building for Willys-Overland Co., Toledo, O., 2500 tons; Donnelly building, Chicago, 2400 tons; Bon Marche department store, Seattle, 2000 tons; Raritan river bridge, New

Brunswick, N. J., 2100 tons; bridge across Lake Champlain, from Crow Point, N. Y. to Chimney Point, Vt., 2000 tons, and Boston & Maine railroad station, Boston, 2000 tons.

Export contracts noted in the first half, included 1050 tons, for the Panama Canal commission, Panama, 400 tons for San Domingo, 125 and 100 tons for British Columbia, and 150 tons for Hawaii.

Universities Co-operate in Welding Research

The American Bureau of Welding, the research division of the American Welding society, will devote special attention to the matter of fundamental research during the coming year. To further this work a committee has been appointed with H. M. Hobart as chairman. A number of contacts have been made with the engineering departments of several universities who will co-operate with the society in making these fundamental investigations. Some of the subjects to be studied are: Welds subjected to elevated temperatures; fatigue properties of welded joints; effect of heat of welding on adjacent metal; stresses caused by welding in certain joints; and surface tension of molten metal. Specimens will be made up under known conditions and furnished to the laboratories in accordance with their requests with the assistance of a number of the member companies of the American Welding society.

British Standards To Be Compared in 1932

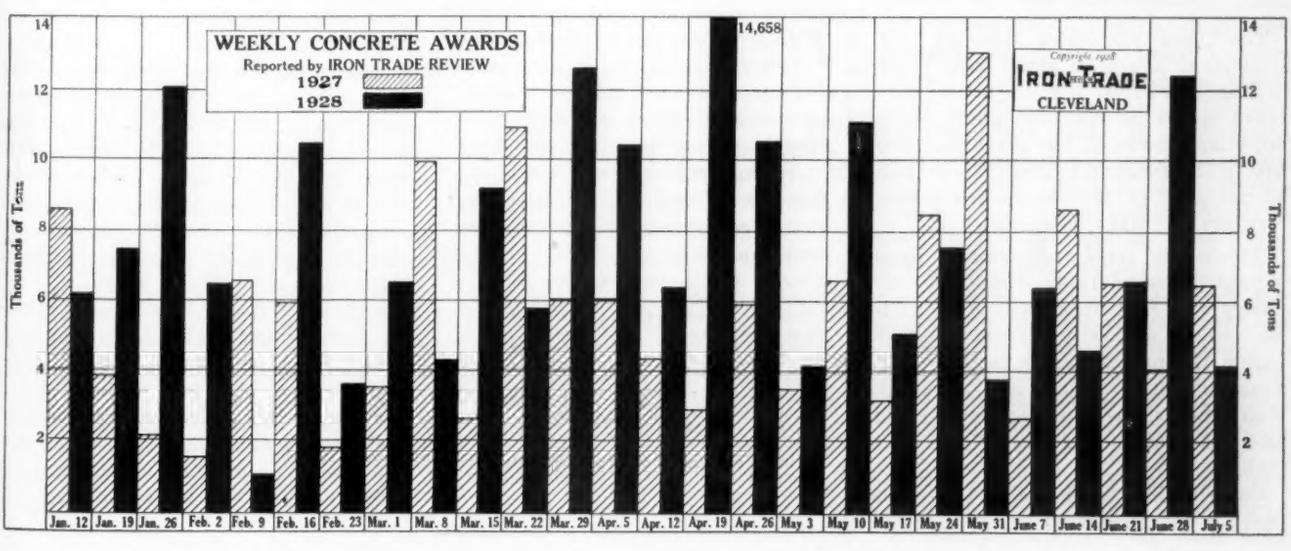
The decennial comparison of the Imperial Standard yard and the Parliamentary copies of the yard will recur in London in 1932 attendant with elaborate ceremonies, it has just been announced. The American Institute of Weights and Measures at present is working to find the best way by means of which standards of the United States and of the British commonwealth, which are identical, can be compared at this decennial by sending bars from this country. The fact that many authorities of late years have set aside precision work on bars in customary American units in favor of precision work on the metric standards presents a difficult angle to the situation, but the institute hopes that these differences may be ironed out in the four years intervening.

DISTRIBUTION BY STATES AND USES

State	Commercial No. Proj.	Commercial Tons	Residential No. Proj.	Residential Tons	Industrial No. Proj.	Industrial Tons	Public Bldgs. No. Proj.	Public Bldgs. Tons	Roadwork No. Proj.	Roadwork Tons	Bridges, Piers No. Proj.	Bridges, Piers Tons
Alabama	....	.....	....	.....	....	.....	....	.....	1	150	1	106
Arizona	....	.....	....	.....	....	.....	....	.....	1	263	....	.....
Arkansas	....	.....	....	.....	....	.....	....	.....	....	.....	1	600
California	7	1,470	3	1,260	9	1,690	8	1,290	1	166	14	12,319
Colorado	....	.....	....	.....	....	.....	2	380	....	.....	....	.....
Connecticut	....	.....	....	.....	1	250	....	.....	5	2,150	....	.....
Dist. of Col.	....	.....	....	.....	....	.....	2	580	....	.....	....	.....
Georgia	....	.....	....	.....	1	100	....	.....	....	.....	2	200
Illinois	24	13,170	22	7,198	20	13,825	22	6,485	16	4,420	7	7,400
Indiana	....	.....	....	.....	....	.....	....	.....	1	160	1	600
Iowa	....	.....	1	200	1	650	.....	.....	1	300	....	.....
Louisiana	1	150	....	.....	....	.....	....	.....	....	.....	1	700
Maryland	1	250	3	500	1	800	5	845	....	.....	2	265
Massachusetts	7	9,200	1	250	3	610	3	1,075	....	.....	4	800
Michigan	....	.....	....	.....	....	.....	1	250	....	.....	....	.....
Mississippi	....	.....	....	.....	....	.....	....	.....	1	100	2	525
Missouri	5	700	7	1,520	3	775	3	390	....	.....	....	.....
New Hampshire	....	.....	....	.....	....	.....	....	.....	1	300	....	.....
New Jersey	3	1,350	....	.....	5	2,800	1	200	8	1,900	4	3,130
New York	6	4,065	1	190	20	6,800	8	2,335	2	300	18	9,630
North Carolina	....	.....	....	.....	....	.....	2	300	....	.....	2	407
Ohio	11	11,280	....	.....	7	3,970	10	1,692	2	1,080	9	6,613
Oregon	....	.....	....	.....	1	100	1	750	....	.....	4	2,675
Pennsylvania	12	1,500	4	1,425	16	3,755	21	4,090	12	1,930	7	2,675
Rhode Island	....	.....	....	.....	1	150	2	350	....	.....	....	.....
South Carolina	1	300	....	.....	....	.....	....	.....	....	.....	1	120
Tennessee	....	.....	....	.....	....	.....	....	.....	....	.....	1	150
Texas	1	1,650	1	325	1	.....	....	.....	....	.....	....	.....
Utah	....	.....	....	.....	....	.....	....	.....	1	155	....	.....
Virginia	....	.....	....	.....	....	.....	1	600	....	.....	1	150
Washington	6	3,060	4	600	7	2,510	7	1,125	3	315	10	2,601
West Virginia	....	.....	....	.....	1	50	....	.....	1	100	2	200
Wisconsin	1	300	....	.....	....	.....	2	526	1	350	....	.....
Totals	86	48,445	47	13,468	98	38,835	101	23,263	58	14,139	98	50,843

Proposal Wins Prize from Research Group

J. G. Pearce, director of the British Cast Iron Research association, has been unanimously awarded by the judges the first prize of 100 guineas for a series of practicable proposals relating to "Goodwill in Industry." The competition was organized by the Glasgow and West of Scotland association of foremen, engineers and draftsmen, and the judges represented the three parties in industry, the employer, the worker, and the technical or administrative officer.



Large Uses of Steel in Small Ways

Typewriter Spools

122nd Article

TYPEWRITER spools produced in this country consume approximately 225 tons of steel annually. Strip steel, screw stock and spring steel are used in their manufacture, though by far the greatest amount of material required is strip steel. In addition 135 to 140 tons of steel is consumed annually in making tin containers for spools of inked ribbon that are sold direct to the public.

On the basis of the first mentioned tonnage, and with each spool weighing about one ounce each on an average, it appears that around 7,200,000 spools are produced annually. While the major portion of these are for typewriters, a large number are required for billing machines, adding machines and similar office equipment.

A comparatively small number of the spools are exported, but the aggregate is considerably larger than the number imported. The United States is by far the greatest typewriter producing country in the world, and also is the largest exporter. Between 600,000 and 700,000 typewriters are made in this country annually.

Industry 20 Years Old

The typewriter spool industry was established about 20 years ago. Prior to that typewriter manufacturers produced spools as they did many other important parts of the machine. Today it is estimated that more than 90 per cent of the spools are manufactured by other companies.

Typewriter spool requirements have increased considerably since the industry was first organized. One leading trade authority estimates that within the past 20 years requirements have increased around 300 per cent, with the strides particularly rapid prior to and during the World war period.

Contributing to the gain in recent years is the increasing use of portable typewriters. The spools required for such machines are much lighter than those for typewriters subjected to hard usage in many business offices.

Considerable progress has been made in speed of production of typewriter spools. Virtually every step now is automatic. Only a few years ago it took two hours to bake the enamel, but it now takes about 17 minutes. Comparable strides are to be noted in various machining operations. Counting three operations to each side of the spool, 15 distinct steps generally are involved in its manufacture. Some spools, particularly the reversible type, have as many as 10 parts. There are many types. One leading manufacturer produces as many as 70 different kinds of spools. Many are for machines fast becoming obsolete, and in general the tendency is toward standardization.

The average individual container weighs about ¾-ounce, as against one ounce for each spool. Substantially fewer containers are required, for while each spool that is sold direct to the public is in a container, those sold to the typewriter manufacturers for use as initial units of machines are not so enclosed, although carefully packed.

THIS is the one-hundred twenty-second of a series of articles dealing with some of the obscure uses of steel which go far toward absorbing the American tonnage.

Among articles appearing every two weeks and not included in Vol. I containing 51 separate descriptions are:

Vacuum Bottles	*Suspenders*
Highway Guards	*Screw Hooks*
Numbering Machines	*Steel Bridging*
Joist Hangers	*Mail Boxes*
Straight Razors	*Steel Shelving*
Piano Wire	*Automobile Bumpers*
Type Molds	*Tire Chains*
Swords	*Bathroom Fixtures*
Paving Guards	*Snow Fences*
Reaction Kettles	*Stairs*
Fire Screens	*Cork Screws*
Voting Machines	*Universal Shafts*
Display Racks	*Sewing Machines*
Steel Stamps	*Lanterns*
Wire Screens	*Cleats*

Tulsa Rolling Mills Will Utilize Scrap

Tulsa Rolling Mills, recently organized with $600,000 capital at Tulsa, Okla., is building a plant to manufacture from scrap with capacity of 50,000 tons a year. J. H. McAlarney, formerly assistant to the president of the United States Steel Products Co., is president; L. W. Conroy, formerly general superintendent of Sheffield Steel Corp., Kansas City, Mo., is vice president; and C. F. Tingley is secretary-treasurer. A number of prominent Tulsa oil men are stockholders. Principal products will be reinforcing and merchant bars, steel for sucker rods in oil field operations, strips and bands, steel castings, etc.

Sponsors Research Tests

The research committee on the effect of temperature on the properties of metals, a joint committee of the American Society for Testing Materials and the American Society of Mechanical Engineers, is conducting a series of long and short-time tests on a variety of metals in co-operation with 20 industrial and governmental laboratories. Since these tests must be fitted into the routine schedule of these laboratories results are somewhat slow in developing, although considerable progress has been made already. One project is a group of fatigue tests on metals at high temperatures being conducted at the University of Illinois engineering experiment station, being sponsored by a number of steam-turbine manufacturers. Arrangements are being completed with another university for a series of thermal conductivity tests.

How a Large Company Designs and Builds Jigs and Fixtures

Five Important Divisions of Planning, Designing, Ordering, Toolmaking and Inspection Are Co-ordinated in Making Telephone Parts

By F. P. Hutchison

WITH the general adoption of tools which will insure interchangeability of product and the increasing necessity for more economical manufacture, the efficient designing and building of jigs and fixtures is being emphasized more than ever before as an important factor. One of the industries to which this statement may well be applied is the manufacture of telephone apparatus and equipment, especially when handled on a large production basis as is done in the plants of the Western Electric Co. Here over 13,000 separate and distinct kind of apparatus are manufactured, in the assembly of which are used approximately 110,000 different parts made on an interchangeable basis from over 18,000 different sizes, shapes and kinds of raw material.

The manufacture of these products involves not only all the standard operations usually found in wood and metalworking shops, but many special operations as well. It requires the use of many different designs and kinds of tools falling under the general classification of jigs and fixtures ranging in cost from a few dollars to over $5000, and in size from drill jigs and fixtures, which are small enough to be carried in a man's vest pocket, to portable fixtures used for assembling and holding during arc welding, structural steel frames approximately 11 feet long and 4 feet wide. However, the larger per cent cost less than $300, as, generally speaking, the majority of the parts manufactured are small in size.

The same general procedure is followed for the manufacture of jigs and fixtures as for other classes of tools, the work being divided into five steps or divisions, namely, planning, designing, ordering, toolmaking and inspection, which will be considered in the order given.

To meet the increasing demands of the telephone business, new and changed designs of apparatus and equipment are constantly being developed for the purpose of improving the quality and reducing the cost of telephone service, which means that manufacturing requirements are continually changing. These new and changed designs must be analyzed and the best available methods of manufacture determined consistent with the quantity of parts to be made and the accuracy required. This work is performed by planning engineers, who prepare the manufacturing analysis giving the sequence of operations, tools and machines to be used, speeds, quantity of materials required for unit output, and other manufacturing information. These engineers determine the new or changed tools, such as jigs and fixtures, which will be needed, make a preliminary estimate of the cost, and prepare the necessary requisitions for their designing and building.

Studies are also being carried on by groups of engineers with the object of reducing manufacturing costs.

Complicated Production

THE design and building of jigs and fixtures constitutes an important factor in the manufacture of small parts in large quantities. Some idea of the magnitude of this problem may be gained from the fact that in the making of telephone apparatus in plants of the Western Electric Co., over 13,000 *separate kinds of equipment are produced, and in the assembly of these approximately* 110,000 *different parts made on an interchangeable basis from over* 18,000 *sizes, shapes and kinds of raw material. The accompanying article, a paper presented recently before the machine shop practice division of the American Society of Mechanical Engineers at Newark, N. J., shows how this company has co-ordinated its various departments to meet the requirements at a reasonable cost. The author, F. P. Hutchison, is chief of tool design, manufacturing objectives and labor grading division of the Western Electric Co., Kearny, N. J.*

Both large and small plants should find valuable suggestions in this article.

As a result of these investigations, requisitions are often originated for the designing and building of new jigs or fixtures or for improvements in present tools. It would appear that if the planning job was done properly at the time of the original analysis, there would be no need for further study. However, this does not always hold true, as methods, processes and tools which already have been proven in and it is known will work satisfactorily, must be specified as far as possible, in order that the product may be produced by a specified date and at near the estimated cost. Later, after manufacture is under way, it is possible to try out new ideas and improved methods and tools without holding up production. Also in many cases the quantity of a part manufactured increases sufficiently to warrant improved and more expensive tools, which could not have been proven in on the lower schedules.

After the tool requisitions have been written up and properly approved in accordance with the estimated cost, they are routed to the tool and gage design division.

The tool and gage design organization is divided into sections according to the class of work handled, for example, there is one group which designs drill jigs and tapping fixtures; another arc welding, milling and assembly fixtures; a third screw machine and heading tools; a fourth riveting, molding and spot welding fixtures, etc. This plan is not only of advantage from an organization and assignment of work standpoint, but tends to produce more efficient designs and lower design costs, especially considering the very large variety of tools involved.

To handle efficiently between 6000 and 8000 requisitions per year, approximately a third of which are for jigs and fixtures, it is necessary that the completion dates for the design work necessary be determined and the jobs scheduled accordingly on the groups handling each particular class of work. This function is performed by the scheduling section, which main-

tains a balanced load against each design section's capacity. The requisitions or orders are assigned to the designers by the supervisor in charge of the group. After the drawings have been completed, they are checked in detail by checkers, and for general design by the section and department chiefs before being finally approved by the chief of the design division.

The actual time and expense for design work is recorded for each order and included as part of the total cost of the tools. For jigs and fixtures the design expense may vary from 5 per cent of the total cost to several times this figure depending on the nature of the design, amount of development work necessary, number of tools being built, etc. Every effort is being made through standardization and other means, to hold design costs to the lowest possible figure consistent with good practice.

Few ink tracings are now being made at the time of designing except in special cases or where it is probable that the drawing will be subjected to considerable handling, as for instance when a number of prints may be required at frequent intervals for reorders or maintenance purposes. The majority of the drawings are made only in pencil on Albanene cloth cut to five specified sizes ranging from 7½ x 12½ inches to 31½ x 38½ inches within border lines and with the standard form printed,so that no ruling or lettering for this part of the drawing is necessary by the designer. If it is later found advisable to make an ink tracing, this can be done when required. Meanwhile any corrections or changes found necessary in the design can be made much easier and at less cost on the pencil drawing than if a tracing had to be changed.

Many Different Designs Filed

As between 1200 and 2000 drawings and sketches for jigs and fixtures are made yearly, there are now a large number of different designs on file, so that it is often possible to eliminate making a drawing for a new tool and specify it shall be similar to another drawing with certain modifications. Where only one tool is to be made and the design is comparatively simple, instructions for making included on the order together with the drawing of the apparatus or piece part will often suffice. Approximately 12 per cent of the orders issued for new jigs and fixtures not previously designed are being handled satisfactorily on a not-drawn basis. In many cases, a sketch or drawing showing only the drilling and milling layout and specifying standard parts is furnished.

Considerable progress has been made in the standardization of tool designs and further studies of this nature are being carried on. Standard drawings have been made for various types of drill jigs and fixtures, as well as other tools; and details, such as bushings, channels, latches, springs for plate jigs, gage pins, jig feet, clamping cams, etc., have been standardized and stocked where the quantities used are sufficient.

Tool Steel Classified

Tool steels have been classified and assigned code numbers, except in the case of S. A. E. specification steels where the standard classification numbers are used. Trade names of steels are not shown on drawings except in special cases. The purposes for which the various steels are best suited have been determined by the metallurgical department and a table with over 250 classifications of tools and parts has been prepared giving the code numbers of the proper steels to be used and the degree of hardness according to the Rockwell scale. Information is given on each drawing as to the heat-treating method, whether cyanide or pack hardening, and the specification number covering the process. In addition if packed hardened, the depth of case, the treatment number, and the tempering temperature is shown.

A book of standard design practices has been compiled in looseleaf form which is furnished each designer, and the following rules have been established in connection with its use.

1. The instruction and data included shall be followed as far as possible so that similarity will exist in the drawings made by different individuals, and designers are not to deviate from them without the consent of their supervisor.

2. Parts commonly known as standard tool parts, as well as such commercial articles as are kept in stock and ready for use, shall be incorporated in all designs whenever suitable whether the tool is new or to be changed.

3. Typical designs shown are to be followed as closely as possible whenever practical for the particular job on hand.

4. Economical production of equipment depends on the careful selection of parts and materials entering into the tool and care should be taken to scan the data sheets as well as the stock lists for suitable parts and material before designing or using anything special.

Some of the important factors considered in designing drill jigs, and also tapping and milling fixtures where applicable are:

1. Design of jig should be simple, light to handle, safe for the operator to use, and strong to withstand rough usage so that accuracy is not destroyed.

2. Locating pins or blocks should where possible locate the part from the same points as in preceding operations if any have been performed.

3. Clamps and methods of holding the work should be as few as possible consistent with rigidity and accuracy, and easy and quick to manipulate, so that loading and unloading time will be reduced to a minimum.

4. Provision should be made for chips and burrs, so they can be easily cleaned out particularly away from locating points.

5. Bushings should not be placed in movable parts, such as leaves, unless it is unavoidable.

6. The design should be such that all holes or as many as possible are drilled at one setting.

7. Wearing parts should be designed so that they may be repaired or replaced wtihout reconstructing the entire jig or fixture.

8. Whenever possible and production requirements permit, the design should be such that a tool can be used for more than one part by means of interchangeable details.

Due to the large variety of equipment and apparatus manufactured, many special designs of jigs and fixtures not required in the more or less standard or common manufacturing operations, such as drilling, milling, tapping, etc. are necessary, which call for more than average designing ability. The assembly and adjustment of the apparatus requires many different kinds of fixtures for locating and holding the piece parts in position to facilitate this work both on machines and by hand operations on the bench.

Variety of Fixtures Required

Welding both spot and arc is an important operation requiring a large variety of fixtures, ranging in cost from less than $100 to several thousand dollars for the largest arc welding fixtures previously referred to, which are used for welding dial system frames made of channels, angles and flat stock. These fixtures are mounted on trucks so that the details can be assembled by helpers and the fixtures moved into the welding booths for the welding operations. They must be designed so as to prevent distortion and maintain limits which are comparatively close for this class of work. Several of the drawings for these fixtures each cover as many as 25 large-size sheets.

Many small parts are spot welded in fixtures used in welding machines

of the press type, and these are usually designed to assemble parts within close limits. In fact, to obtain the correct functioning of the apparatus or equipment and also to insure interchangeability in assembly, a large percentage of the piece parts must be made and put together with a considerable degree of accuracy often within limits of less than 0.001 inch for some of the dimensions and the tool designs must be made accordingly.

The design division forwards the tool requisition together with the necessary prints to the tool ordering division. This organization checks the estimated cost and approvals, places orders for patterns, castings, or forgings, and standard commercial parts as required, and follows these orders to insure delivery to the tool room. They write up the final order giving the layout of the departments to perform the work and operations to be performed by each, complete description of the tool, final estimated cost, and other manufacturing information. The order with prints attached is then forwarded to the shop with copies to the technical and accounting organizations interested.

Although in special cases and, when production requirements have necessitated doing so, tools have been made in accordance with the company's drawings by tool manufacturers, the company has found it expedient and desirable as a general practice to build its own tools. Considering the high standards which are maintained and the accuracy usually required, a substantial advantage from both a quality and tool service standpoint is gained by so doing. Approximately 600 toolmakers and machinists are normally employed in the actual making, changing, and repairing of tools, about 100 of whom are engaged on jig and fixture work.

Specialization Emphasized

Specialization of work or division of labor in the tool room has been carried out to a high degree. The main groups are the milling machine section, the grinding section, the lathe section, the gage, jig and fixture bench work section, and the punch and die bench work section. These sections are further subdivided according to type of work handled with specialists in each who do only that class of work, as for example, there are men in the bench work sections who work on the final fitting and assembly of drill jigs, others on assembly fixtures, etc.

When an order is received in the toolroom the necessary clerical work in connection with recording, scheduling, etc., is performed and the raw material and standard parts are drawn from stock. The material, including any forgings or castings, together with a work ticket is then routed to the proper sections for performing the various machining operations. The machined parts upon completion are forwarded for fitting to the bench work section handling the particular class of work. Parts requiring hardening have this operation performed by specialists on this kind of work, using the most improved equipment and automatic temperature recording and control, after which they are returned to the bench work section for the final fitting and assembly.

Increased Efficiency Obtained

By this plan each operation is performed by a man skilled in that particular work so that a minimum amount of time is necessary and increased efficiency and accuracy is obtained. Also since the skill required varies for the different operations, the proper grade of workman can be employed for each, thus resulting in a much lower labor cost than if a high-grade toolmaker, required for the bench work, performed all the operations and built the tool complete.

Practically all of the accurate work in connection with laying out and boring holes in jigs and fixtures is done on jig boring machines and vertical millers equipped with verniers, and methods such as the size block, disk, button, vernier caliper, height gage, etc., are seldom used. As in the case of other machine operations, this work is performed by specialists experienced on these machines. So that the highest quality and accuracy in the minimum amount of time, is obtained.

As previously mentioned, details such as drill bushings, latches, springs, gage pins, clamping cams, jig feet, etc. have been standardized and are made in quantities and stocked. In addition to jig and fixture details, parts for other types of tools and a large variety of small tools, including taps, dies, reamers and milling cutters are made and handled on a stock basis. This work is performed by a separate toolmaking department set up for this purpose and a large part of it is done on a gang piecework basis, the earnings being distributed weekly on a pro-rata basis in a manner similar to regular production in the general manufacturing departments.

Standard manufacturing layouts giving the operations to be performed, machines and tools used, etc., are issued for stock parts, the same as is done for apparatus and piece parts, although the amount of detail given on the layouts varies according to the nature and output requirements of the part. A plan such as this, which results in large economies, is of course practical only where the quantities to be made justify such a practice.

Upon completion, the jig or fixture is routed to the tool inspection organization where it is inspected for workmanship, conformance with the drawing, and whether the part produced is satisfactory. In some cases it is necessary to make a test of the tool under operating conditions, commonly termed a "try-out" in order to determine the accuracy, probable durability, safety, speed, ease of operation, and that it does not injure the product or disturb any previous adjustments. In this connection it might be mentioned that while the convenience of using the jig or fixture must not be overlooked as an item in facilitating production and preventing unnecessary fatigue, safety of the employe is a factor of paramount importance which is always given careful consideration.

Tool inspection in reality forms the connecting link between the manufacturing tools and the finished product. Good inspection requires not only the ability to interpret drawings and make accurate measurements, but some degree of technical knowledge as well and an appreciation of the economical and correct use of tools and gages. Tool inspection work has also been developed and divided into more or less specialized units with the resulting advantage of higher grade work at less cost. To facilitate inspection operations and insure the required accuracy, precision measuring instruments and gages, such as gage blocks, dial indicator gages, optimeters and contour-measuring projectors are used, although these are not required as much in connection with jigs and fixtures as for some of the other types of tools and gages made.

Improvements Constantly Sought

To cover completely all the practices, methods, routines, etc., followed by the Western Electric Co. in the design and building of the many different types of jigs and fixtures is beyond the scope of a short discussion of this kind, and in the foregoing description an effort has been made merely to give without the inclusion of too many details, a general picture of the way the work is handled.

Although the present practices are satisfactorily meeting requirements at a reasonable cost, this does not neces-

sarily mean that they are considered the best possible methods. As mentioned before, studies are being carried on and improvements and changes are constantly being made in an effort to further reduce costs and still maintain high standards of quality and accuracy.

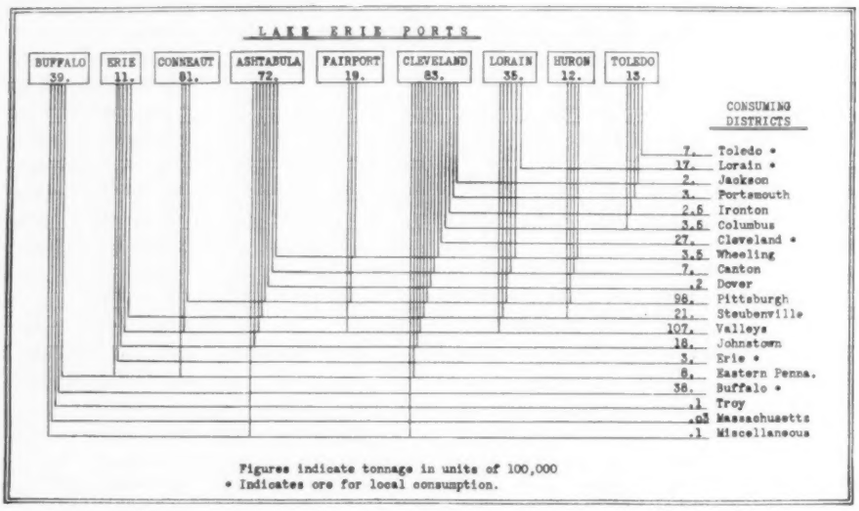
The smelting of iron in forest hearths at Schmalkalden, Germany, dates back to the year 1100.

Work Day Is Longer

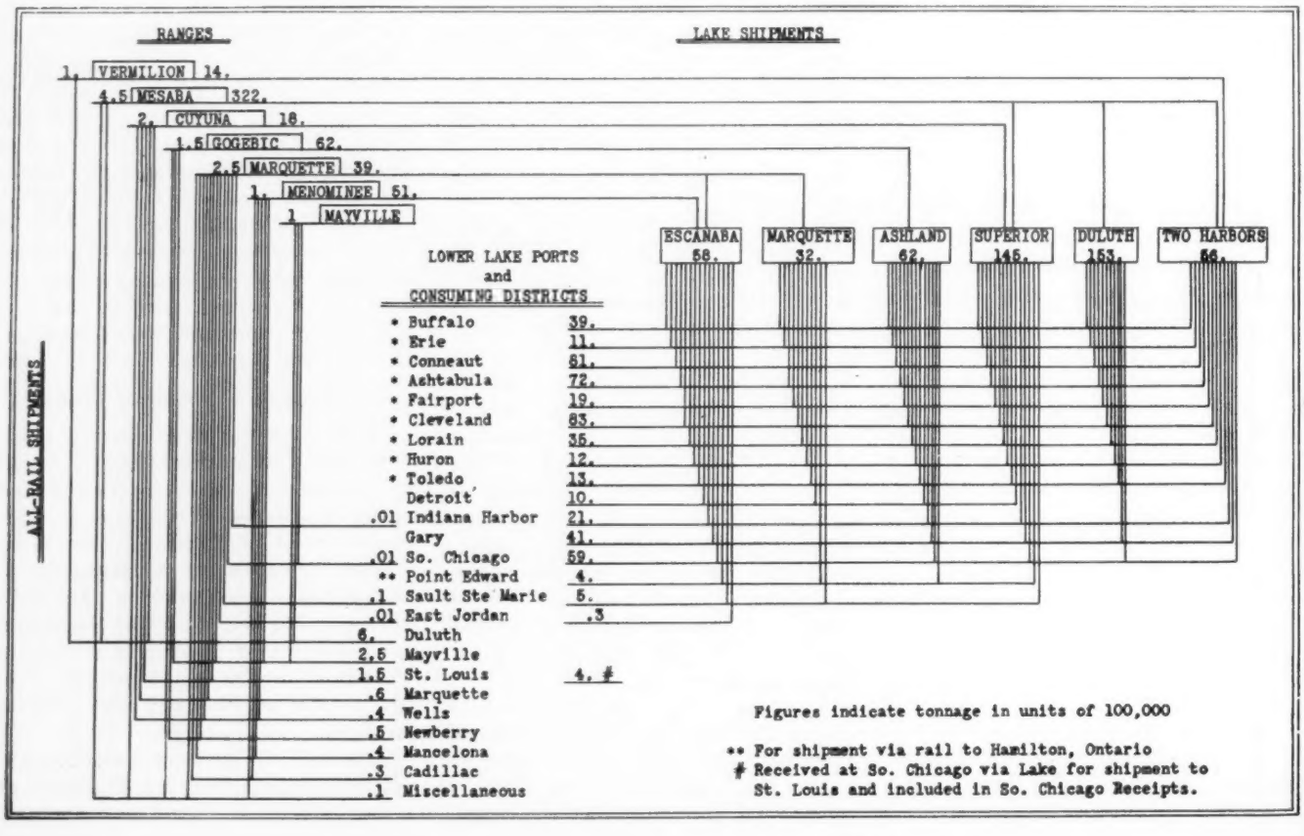
A gain of 80 per cent in hours of work for 42 of the largest manufacturing plants in the vicinity of Worcester, Mass., has been made in the past year, according to a recent survey. The May, 1928, records show 2,123,921 additional hours compared with May, 1927. The number of employes increased but slightly but the substantial gain in hours is significant. The average daily employment per person increased from 5 to 8 hours, indicating that part time work in the district has dwindled to a point close to normal.

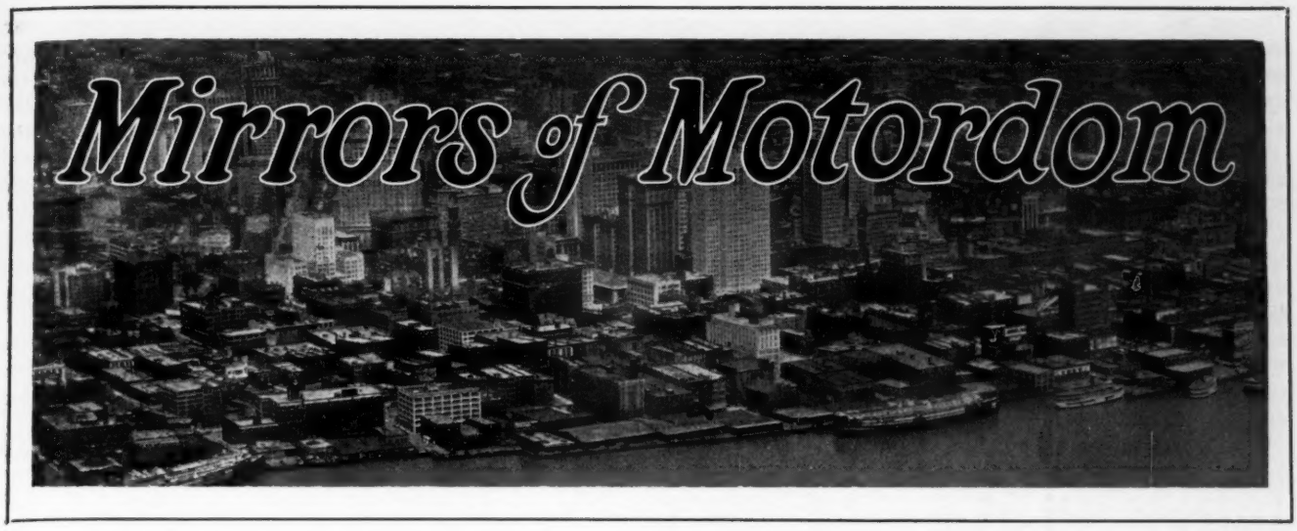
Charts Show Distribution of Lake Superior Iron Ore

The upper chart traces the ore from the lower lake ports to furnaces at lake cities and to interior districts. The charts were prepared by the Lake Superior Iron Ore association



The lower chart indicates shipments from various ranges, traces them through upper lake ports and to destination at lower lake ports. It also shows the all-rail shipments from the ranges





New Models Maintain Auto Steel Specifications

* * * * * * * * *

Detroit Envisages Steel Industry on Lower River

Detroit, Aug. 14.

ONCE there was a manufacturer of automobiles who did not change his models for over a year, but now that he has—and this is no fairy tale—he is 800,000 orders behind.

In the past 60 days Chrysler, Nash, Studebaker, Buick, Hupp, Peerless, Chandler, Reo Wolverine, Marmon and Moon all have announced more or less radical changes both in power plants and bodies. New Packards, Cadillacs, LaSalles and Oaklands are ready for their debut. Chevrolet will change in November as usual. Hudson-Essex has about broken its record for a run on one series. It takes a hard driver these days to put 10,000 miles on his speedometer before his is a last year's car.

* * *

FOR the automotive industry this styling of its product, this artful maturing of man's insatiable hunger for the new, is quickening it as rarely in mid-August. Specifications for steel in the first half of August show little deviation from the first half of July. It is, however, universally recognized that the lean weeks of late fall and early winter, prior to the pre-show activity, approach. But there was no perceptible lull this summer and this fall may also escape the seasonal dip.

* * *

FORD is now cracking along at 3500 per day or better, considering assembly at all branches. At the Fordson plant 360 units daily are dropping off the assembly line while the Canadian plant at Walkerville is averaging 500 and doing better than the palmiest Model T days. Engine production at Fordson has reached 4100 a day recently. Occasionally the Ford purchasing department asks for a few days' holdup on certain materials, but on the whole its appetite for steel is large and increasing. Contrary to other makers, a model change is the last thing wanted by Ford.

Buick may put on a night shift to get production up to 1200 units daily, or capacity. Chevrolet is swinging along at 5000 but cautioning material suppliers to keep on the under rather than the over side of shipments. Hudson-Essex, Dodge, Hupp, Pontiac and Chrysler are at their late July rate. Willys-Overland is down to 1200.

* * *

THE statement of Walter P. Chrysler that the Dodge Bros. name and tradition will be continued leaves no doubt concerning the manufacturing operations, but the ascendancy of the Chrysler organization is unmistakable. Chrysler executives now control Dodge engineering, production and sales and are in process of acquiring purchasing.

Undoubtedly a new General Motors is in the making here. Assets of Chrysler-Dodge now total $700,000,000, compared with $750,000,000 for the Ford Motor Co. and $1,100,000,000 for the General Motors Corp. With one DeSoto, one Plymouth, three Chrysler and three Dodge lines, the Chrysler Corp. now blankets about all the passenger car field covered by General Motors models, while the new Chrysler Fargo truck is a wedge into the truck field.

Chrysler is concentrating production of its 65, 75 and 80 models at its Jefferson avenue plant, clearing the Highland Park plant for the DeSoto and Plymouth.

* * *

IN BODY styles, too, General Motors and Chrysler are locking horns. Almost two years ago General Motors, or to be more specific Fisher Body, set the pace with the sleek and slender LaSalle. For most of the body changes since, LaSalle has been the prototype. Now Chrysler has refined its characteristic lines with the slender radiator profile. Almost simultaneously, Buick has gone in for curves and obesity, creating an entirely new mode and one, incidentally, which may set the style for other General Motors cars. The new Buick has precipitated a storm of comment—most of it unfavorable—but it is claimed that the car "grows" upon one and that the greater roominess of the body plus the performance of the greatly-enlarged power plant negate the first impression.

* * *

MANY who have followed the personal cross-currents of the automotive industry attach deep significance to the passing of Pierre S. duPont and John J. Raskob from the council hall of General Motors. They believe that something akin to a radical revision in General Motors dominance is in progress, and that when the smoke of the presidential campaign has lifted W. C.

Durant will be found for the third time in high place. Control, some predict, will be found resting with Durant, Alfred P. Sloan Jr. and the seven Fisher Brothers.

Back of the breach, and it seems to be a real one, is the dictum of Sloan that General Motors is not in politics and that it cannot afford to be too closely allied to either presidential candidate's camp. When Raskob thus chose to relinquish his chairmanship of the finance committee rather than the chairmanship of the Democratic national committee he enlisted the sympathy of DuPont, for it was as secretary to DuPont that Raskob got his start in life. Should Smith win and Raskob become his secretary of state and DuPont an ambassador, as the rumor mongers have it, the problem would be simplified. It may or may not be significant, but the new Fisher tower on West Grand boulevard looms dominantly over the General Motors building across the boulevard.

* * *

BLAST furnaces and steelworks lining the Michigan bank of the Detroit river from Wyandotte south to Trenton and perhaps Monroe piers to provide southeastern Michigan with the 2,000,000 tons or so of finished steel which it consumes annually—this hope of Detroit will come before congress next December in the McLeod bill. This measure would provide a 24-foot channel on the American side of the lower Detroit river to relieve the American-built channels on the Canadian side and anticipate completion of the lakes-to-sea waterway.

On the American banks of the lower Detroit river are said to be many acres of relatively low-priced

(*Concluded on Page* 428)

Large Pistons Made Oversize by Gas Torch

AFTER a certain amount of use, the cylinders of steam pumps wear out of round and it is necessary to rebore the cylinder. When this operation is completed, the original pistons will, of course, no longer fit tightly, and replacement is required unless some means can be found to increase the piston diameter.

According to an article which appeared in the July issue of *Oxy-Acetylene Tips*, an oil company on the Pacific coast, finding replacement prohibitively expensive, was experimenting with the following method of enlarging pistons. The piston was chucked in a lathe or boring mill and one or more dovetail grooves about 1-inch wide were cut in its face. The grooves were then filled with a special plastic bronze composition which was allowed to project above the piston surface sufficiently so that, after machining, the piston would fit the rebored cylinder.

An oxyacetylene service operator suggested that more satisfactory results might be obtained by building up the undersize pistons with manganese bronze. This idea appealed so strongly to the superintendent of the plant that he made arrangements to try it out at once.

Pistons used by the company vary from 20 to 52 inches in diameter. Some are of the two-piece type, an outer ring known as a "bull ring" being mounted on the body of the piston. One of these bull rings 30 inches in diameter, shown in Fig. 2, was selected for the experiment.

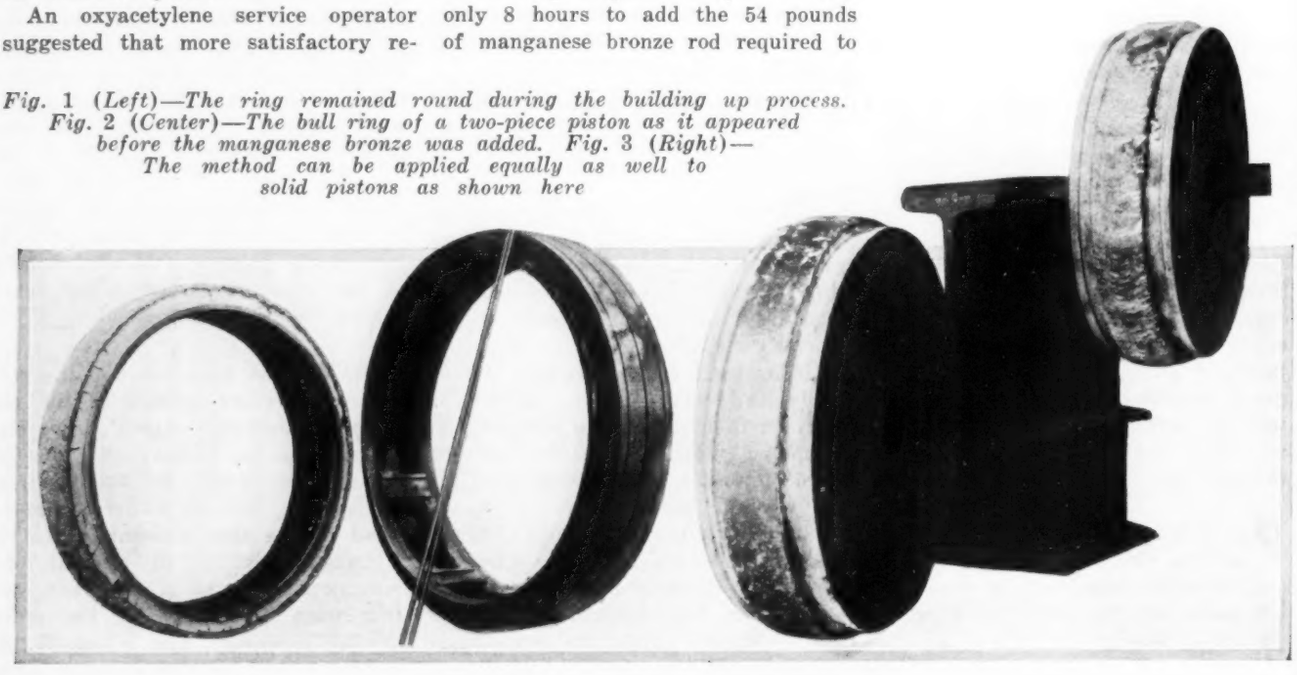
Surface Layer Built Up

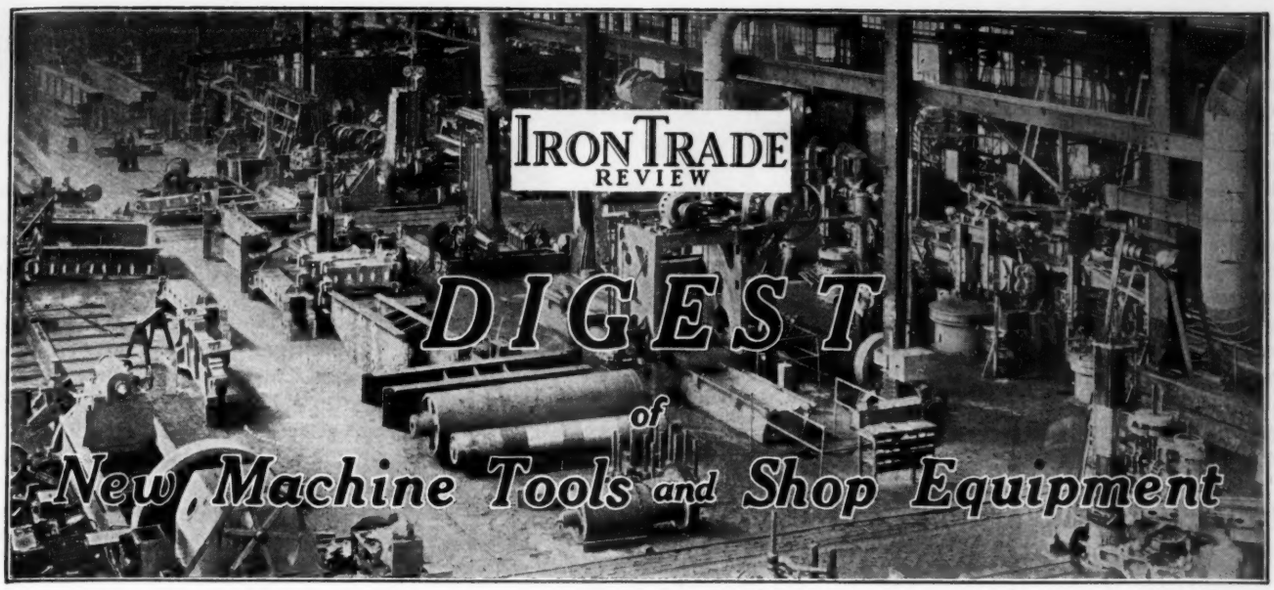
Under the supervision of the service operator, one of the plant welders proceeded to build up the surface by adding a ¼-inch layer of manganese bronze. The entire face, 6 inches wide, was built up at one time, the ring being slowly turned as the work progressed. One complete revolution of the ring completed the job. It took only 8 hours to add the 54 pounds of manganese bronze rod required to form the layer 30 inches in diameter, 6 inches wide and ¼-inch thick. When allowed to cool, the ring, shown in Fig. 1, was found to be absolutely round without any trace of warping.

This thoroughly convinced plant officials of the merits of this method. Some of its advantages over metal inlay previously used were found to be: About 100 per cent more wearing surface; a stronger piston instead of a weakened one; and increased life.

As a result, this company has adopted as standard the practice of building up pistons with manganese bronze. Just recently it was necessary to overhaul a large steam pump and rebore the cylinders. Two 20-inch and two 36-inch solid pistons were dismantled and built up with manganese bronze while the cylinders were being rebored. Fig. 3 shows these pistons in the process of being built up.

Fig. 1 *(Left)—The ring remained round during the building up process.* *Fig.* 2 *(Center)—The bull ring of a two-piece piston as it appeared before the manganese bronze was added.* *Fig.* 3 *(Right)—The method can be applied equally as well to solid pistons as shown here*

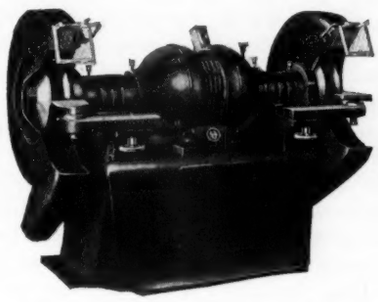




High Speeds Feature of Grinder and Snagger

No. 207

United States Electrical Tool Co., 2495 West Sixth street, Cincinnati, has placed on the market a new machine especially designed for high-speed grinding and snagging. A speed of 9500 surface feet per minute is obtained on this machine with wheels 30 inches in diameter, having 2½ or 3-inch face and 18-inch hole. When worn down to 24-inch diameter the wheel turns at 7500 surface feet per minute, thereby averaging 8500 surface feet per minute. The machine is furnished for 220, 440 or 550 volts two or three-phase alternating current, and 220 volts direct current. The motor is 15 horsepower, designed for heavy-duty surface grinding service and is rated for continuous service at full horsepower. The shaft is made of nickel steel, in one piece, and mounted on four ball bearings in dust-proof housings. Wheel flanges are keyed to the shaft, and clamped to the wheel by cap screws. Structural steel safety hoods, as shown in the accompanying illustration, are built over the wheels and are constructed for wheel speeds of 10,000 surface feet per minute.



No. 207—High-speed grinder

Control Panel Built for Charging Equipment

No. 208

General Electric Co., Schenectady, N. Y., has designed a new control panel for use in conjunction with a motor-generator set for charging six storage batteries, each of the 42-cell, 13-plate type. The panel consists of unit sections, generator section and charging sections. On the generator section are mounted a snap switch for controlling the magnetic starter; a tumbler switch for full automatic shut down; a field rheostat; a voltage

Iron Trade Review's Calendar of New Equipment

No.	Item	Builder	Comment	Date Described
182.	Single and duplex strainers	Anthony Co.	Blow-out permits quick cleaning	July 26
183.	Bushing press	Niles Tool Works Co.	Sliding table with separate motor	July 26
184.	Air compressor-tractor unit	Pontiac Tractor Co.	Separate radiator for compressor	July 26
185.	Rotary surfacers and cutters	Tindel & Phillips	Self-fastening blades	July 26
186.	Dragline shovel	Link-Belt Co.	2-yard capacity; several adaptations	July 26
187.	Flexible-rope drive	Boye & Emmes Machine Tool Co.	Quiet; avoids stretch and slip	July 26
188.	Double-pass air filter	National Air Filter Co.	Self-cleansing in oil bath	July 26
189.	Riveting machine	Hanna Engineering Works	Adjustable for use on auto frames	Aug. 2
190.	Pumping unit	American Manganese Steel Co.	Portable; pump parts of manganese steel	Aug. 2
191.	Motor control switch	General Electric Co.	High interrupting capacity; minimum arcing	Aug. 2
192.	Coiler and slitting machine	Torrington Mfg. Co.	Slits and coils wide strips	Aug. 2
193.	Crawler crane	H. D. Conkey & Co.	Gasoline or electric operated	Aug. 2
194.	Universal jig	Modern Machine Tool Co.	Slotted stop and bushing plates	Aug. 2
195.	Boring and milling machine	Joseph T. Ryerson & Son Inc.	Handles both small and bulky work	Aug. 2
196.	Monorail trolley and hoist	Edgar E. Brosius Inc.	Entirely of steel; worm drive	Aug. 2
197.	Regulator	Alexander Milburn Co.	Reduces gas pressures in welding	Aug. 9
198.	Belt conveyor idler	Fairfield Engineering Co.	Interchangeable rollers	Aug. 9
199.	Portable cooling fan	Peerless Electric Co.	For industrial use; 18-inch diameter	Aug. 9
200.	Welding torch	Air Reduction Sales Co.	Light size; for thin-metal welding	Aug. 9
201.	Dinkey controller	Electric Controller & Mfg. Co.	Welded steel frame; improved ventilation	Aug. 9
202.	Radiation pyrometer	Colonial Supply Co.	Pocket size; high sensitivity	Aug. 9
203.	Air motor hoist	Ingersoll-Rand Co.	20,000-pound capacity; equipped with safety brake	Aug. 9
204.	Metal punch	Whitney Metal Tool Co.	Roller-bearing; lever-type	Aug. 9
205.	King bolt pilot	Scully Steel & Iron Co.	For use as extension on expansion reamers	Aug. 9
206.	Power presses	American Can Co.	High production; six engaging point clutch	Aug. 9
207.	Grinder and snagger	United States Electrical Tool Co.	High speeds; direct or alternating current	Aug. 16
208.	Control panel	General Electric Co.	Used with motor-generator battery charger	Aug. 16
209.	Signal relay	General Electric Co.	Warns of power failure or voltage drop	Aug. 16
210.	Journal turning lathe	Niles Tool Works Co.	For double quartering and crankpin turning	Aug. 16
211.	Cable clip	Eureka Metal Products Corp.	Two fully grooved jaws	Aug. 16
212.	Ladle gearing	Whiting Corp.	Ball bearings; cast-steel housing	Aug. 16
213.	Connecting rod borer	Niles Tool Works Co.	For boring and facing operations	Aug. 16

regulator; an overload and shunt-trip circuit breaker; auxiliary and line contactors, and an ammeter and voltmeter. The charging section of the panel incorporates a new development. The double-pole battery contactors are equipped with a shunt-holding coil and operate with ampere-hour meters having quick-break contacts. On completion of the charge, the contact-breaking device opens, de-energizing and opening the contactor and disconnecting the battery from the charging set. The panel is said to be of strong mechanical construction and the sections are easily and quickly removable.

Relay Gives Warning of Power Failure

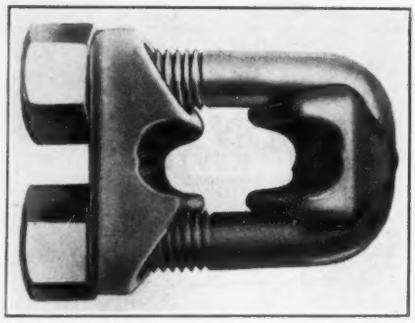
No. 209

General Electric Co., Schenectady, N. Y., is manufacturing a new signal relay, designed for application where a small, inexpensive device is needed to actuate a warning signal when power fails or voltage drops on an important circuit. In operation, the coil circuit of the relay is connected across the two legs of the power supply which it is desired to watch. When the coil is thus energized, the relay contacts are held open. By connecting a circuit through the contacts to a bell, horn, light or other signalling device, warning will be given when the power fails or the voltage drops, as in that event the coil will be de-energized, the contacts will close and the circuit to the warning signal will be completed. The relay can be used on either direct or alternating current.

New Attachments Made to Turning Lathe

No. 210

Niles Tool Works Co., Hamilton, O., has equipped its 90-inch axle journal turning lathe for double quartering and crankpin turning in addition to the turning of inside and outside journals. The crankpin heads are of the box-tool type and are mounted on heavy bases bolted to the bed, the right-hand head on the base to which the outside journal rest is attached, the left-hand head on an independent base adjacent to the faceplate. The heads receive their rotation and lateral adjustment from the quartering attachment spindles and will turn pins from 7-inch to 12-inch diameter, accommodating pins of maximum length. Burnishing tools with shanks to fit the tool slots in the crankpin head tool holders are regularly furnished to secure the desired finish after the turning operation. A recently incorporated improvement on the machine is the steel wearing plates on the bed under the sliding heads to preserve alignment between the two heads, a feature necessary in this type of tool to insure parallel journals.

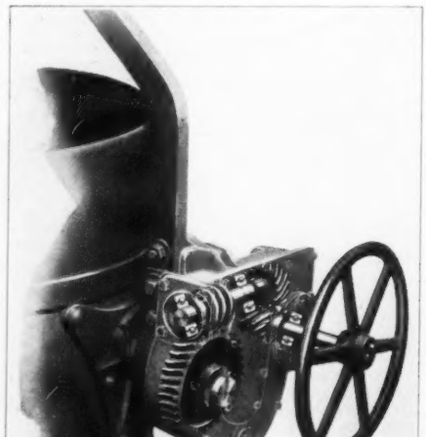


No. 211—Double-jaw cable clip

Two Fully Grooved Jaws on New Cable Clip

No. 211

Eureka Metal Products Corp., North East, Pa., has introduced a new type of cable clip which has two jaws fully grooved for the cable. This device, shown in the accompanying illustration, is said to carry three times the load of the clip with only one jaw. The clips are made in all sizes and are of steel or bronze, designed to give a greater factor of safety due to an improved grip on the cable to which they are attached. The clip construction is said to be simple and rugged, consisting of only four parts, U-bolt, two jaws and clamping nuts. The second grooved jaw is peened to the U-bolt. The double grooved surface is claimed to prevent any distortion to the cable regardless of how tightly the nuts are forced down. The clip may be used with either wire rope or messenger strand.



No. 212.—Improved ladle gearing

Improved Lubrication on Ladle Gearing

No. 212

Whiting Corp., 15607 Lathrope avenue, Harvey, Ill., recently has made several changes in the design of its line of helical-worm geared ladles. These changes include the introduction of ball bearings, as shown in the accompanying illustration, and the use of an oil-tight, cast-steel housing. The cast-steel housing has been introduced to eliminate any difficulty which may arise from the high temperature to which the ladles are exposed and from the sand and grit encountered in foundry operations. The housing permits the gears to operate in an oil bath, similar to that used in the construction of cranes, which prevents dirt from reaching the gears and simplifies the lubricating problem.

Connecting Rod Borer Is of Heavy-Duty Type

No. 213

Niles Tool Works Co., Hamilton, O., recently has developed a heavy type 2-spindle connecting rod borer adaptable for all boring and facing operations on locomotive connecting rods. Each spindle is driven by a 15-horsepower motor, variable-speed, direct-current, giving spindle speeds ranging from 8 to 140 revolutions per minute. The motors are connected to the spindles through gear boxes, the final drive to the spindles being by steel worm and bronze worm wheel. The worms are provided with ball thrust bearings. Spindles are of high-carbon hammered steel with a diameter of 5½ inches in driving gear and 8 inches at the lower end. They are counterweighted and have handwheel adjustment. The main table is provided with T-slots for clamping work and a trough to catch cutting fluid and return it to a tank in the base. Two independently driven pumps are used for circulating the cutting fluid.

Less Coal Mined in June

Bituminous coal output in June totaled 35,963,000 net tons compared with 36,624,000 tons in May and 36,627,000 tons in June, 1927, states the federal bureau of mines. Of the June production Pennsylvania accounted for 9,393,000 tons, eastern West Virginia 8,128,000, eastern Kentucky 3,946,000 tons, Illinois 3,000,000 tons, northern West Virginia 3,133,000 tons, Alamaba, 1,275,000 tons, and Ohio 1,040,000 tons.

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Money Tight, but Building Holds Up
Find Prizes Encourage Suggestions
Iron Ore Tax Now 70 Cents a Ton
Every Day Is a Holiday Somewhere
Competition Proves Standard Value

New Ingot Record Within Reach

STEEL ingot tonnage produced from Jan. 1 to July 31 was the largest ever for that seven-month period. Thus far into August the record gait has continued. The negligible decline in Steel corporation unfilled tonnage as of July 31 forecasts a good early fall. Automotive requirements, a chief reliance this year, show no signs of contracting. Building steel needs continue seasonally high and it may well be that niggardly buying of cars and locomotives by the railroads will result in a compensatingly heavier fall buying movement. Certainly, from the strictly market side the outlook for a record steel year is propitious.

Statistically, a record appears within easy reach. In the first seven months of 1928 ingot tonnage totaled 28,604,456 tons. In 1926, the peak year to date, production was 46,793,255 tons, but this included about 150,000 tons of steel made by processes other than the open hearth furnace and bessemer converter, no longer included in the American Iron and Steel institute's compilation. It will be necessary to make 18,038,797 tons of open hearth and bessemer steel in the remainder of 1928 to establish a new record. This is a daily average of 137,500 tons. The daily average in the first seven months of 1928 was 158,036 tons. Normally the latter months of the year are ones of lower production, but the 147,200 tons averaged in the last five months of 1926 can be shaded as much as 8 per cent and still leave 1928 on top.

A Tax Straw on the Iron Ore Camel

RECENT news reports from St. Paul announce that the state supreme court has decided iron mine operators must pay a tax on royalties. The tax averages $1,000,000 a year. One might infer from the reports that such a tax is not a heavy burden on the iron mining industry. As a matter of fact it is a small proportion of the taxes paid as a whole by the industry. The tax on royalties in itself is a light burden—but so was the straw that broke the camel's back.

The mine operators pay the royalties, and it was the purpose of the legislature of 1923, which passed the law, to impose the tax on the fee-holders. The tax amounts to 6 per cent of the royalties. The supreme court in two cases, however, has ruled against the operators.

To obtain a proper perspective on the importance of the decision one must understand something of the tax situation in its entirety. State and local taxes in Minnesota aggregate approximately 70 cents on a ton of ore. Twenty-two cents is paid for state and local taxes out of every dollar received for the ore at the mines.

The tax burden in Michigan and Wisconsin is much lighter, one reason being that most of the mines are underground, and cost of production is much higher than in Minnesota. The state and local tax in Michigan averages about 26 cents a ton. Applying these averages to the tonnages shipped from the Lake Superior district, state and local taxes amount to $30,000,000 to $35,000,000 a year. The tax on Minnesota iron ore operators in an average year is approximately $25,000,000. One million dollars more in royalty tax, therefore, adds considerably to the tax bill.

The Minnesota operators pay a special occupation tax, amounting to about $4,000,000 a year. If it was not the intention of the legislature to make them pay the royalty tax it should amend the law.

Bona Fide Building Survives Ban

BANKS, building and loan companies and financial groups in many parts of the country are exercising caution in financing building projects. In the West a concerted movement has developed to withhold support from the purely speculative in new building. But in spite of this tendency toward conservatism, the building construction curve is pointing upward. The value of new building last month in Chicago represented a gain of 41 per cent over July, 1927.

This has added significance in view of the fact that in the first half of the year a loss was shown compared with the first half of 1927. The July total was 12 per cent ahead of June, 1928.

The fact that this increase in building represents what is regarded by building construction financial groups as sound building work is doubly encouraging. It is evident that the real demand for building construction work is more vigorous than was indicated earlier in the year in some localities, where speculative building had created an unfortunate situation. It appears that this year will see the rounding out of a building program that again may exceed expectations.

Holidays Take Toll of Business

MULTIPLICATION of holidays for patriotic and religious observance or what not comes near absorbing the entire days of the year, with resulting upsetting of business schedules. Somewhere in the world almost every day is being observed by cessation of business while part of the people celebrate one of a dozen kinds of excuse for their idleness.

In the United States holidays are relatively few and northern European countries are moderate in their expenditure of time. Latin America, the Orient and southern Europe are prodigal. But time and business mean less there than here.

In September this year a compilation shows that of the 30 days five alone are not observed somewhere as idle days. Business somewhere will stand aside on every other day while observance holds the attention of the people.

Yet who shall say our worship of business is of more importance than the religious or patriotic exercise of the people of Abyssinia or Iraq? Who is the umpire with knowledge sufficient to pass on the viewpoint?

A country's customs seem right to itself and we begrudge loss of production resulting from holidays. Other nations may see gains in other directions which exceed mere dollar losses.

Turning Practical Ideas Into Cash

LARGE manufacturing companies have found it advantageous to encourage their employes to submit suggestions on machine design, product design, methods of operation, safety, and the like. One of the country's leading electrical manufacturing plants regularly gives cash awards for suggestions which are adopted by the management. In a two-week period recently awards totaled $595, and this was not a record period. Forty-five employes participated in this payment, the highest award being $75 and the lowest $5. Ideas are paid for according to their value, and individual awards frequently reach several hundred dollars.

Where some well-planned system of this type is adopted, profit accrues to both the employer and the employe. A workman possessing talent and interested beyond the point of giving labor commensurate with the day's wage has an opportunity to increase his personal income. The manufacturer, on the other hand, increases his profits. Both parties take satisfaction in mutual relations of this sort.

In smaller plants, employes are more apt to be remunerated for their resourcefulness through closer personal contact with the employer; nevertheless, there seems much to gain in spurring the suggesting of ideas by a definite plan of cash awards.

Simplification Standing the Test

SIMPLIFICATION and standardization of manufactured products is a development which is attractive and sound and commends itself to ready adoption, but this outstanding contribution of Mr. Hoover to the business community faces its real test when the various standards, or simplifications, undergo their annual review.

To July 1 a total of 95 simplifications had been adopted. In the quarter ended June 30 nine came before their respective standing committees for review. Five were reaffirmed, three were modified and one was divided. The average degree of adherence to these simplifications was 84.32 per cent. The showing is gratifying.

For the high degree of prosperity the country has enjoyed in recent years the elimination of waste is entitled to no small credit. In the coming six months interest is likely to increase, believes Ray M. Hudson, assistant director of the commercial standards group of the department of commerce. He states: "Because of keen competition, rising costs of doing business and shrinking profit margins, both manufacturers and merchants are studying their inventories, the costs of carrying them, relative rates of turnover and similar pertinent factors more intensively than ever."

The woven wire fencing industry presents an apt illustration of the working-out of simplified practice. A year ago it reduced varieties of fencing from 552 to 69; now it has further curtailed to 62. In woven wire fence packages it made an original elimination from 2072 to 138, and now to 117. The saving to producer, jobber and buyer is obvious. It will be increasingly apparent that great economies have been effected without life becoming the drab, uneventful and standardized existence some feared.

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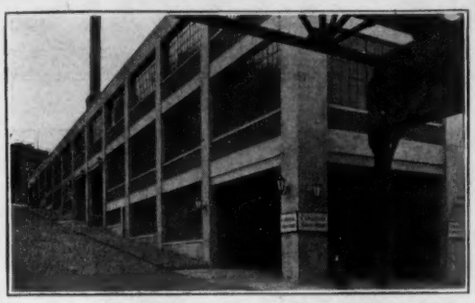

Five States Take 83 Per Cent of Reinforcing Concrete Bar Tonnage. Page 382.

IRON TRADE REVIEW in this issue inaugurates another detailed analysis of steel consumption which is likely to prove of value to many readers, and of much interest to the trade in general. It is a semiannual review of the distribution of concrete reinforcing bars, a summary of data published in IRON TRADE REVIEW from week to week, as compiled by a large staff of editorial representatives in principal consuming districts. The survey shows the number of projects and tonnages in each of seven classifications of uses, by states—comprehensive beyond anything heretofore published.

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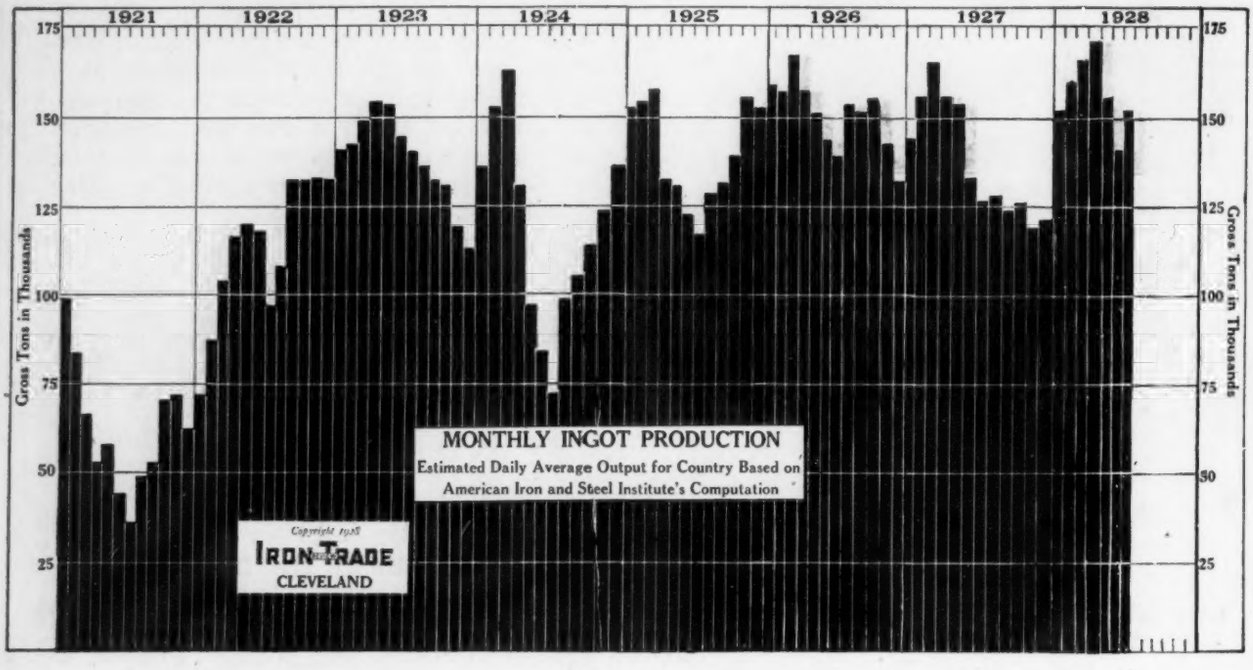
The Business Trend



Outlook for Autumn Encouraging

By JOHN W. HILL, Financial Editor

INDUSTRY has been making an unusual exhibit this summer. Not only has the season failed to bring the normal expectation of slackening, but in some branches of trade new records actually are being made. This is particularly true of employment in the Detroit automobile manufacturing center. Total payrolls there have set up a new precedent, surpassing even the great spring peak of 1926.

IT HAS remained for the steel industry to give the greatest surprise, however. July is a traditional month for some large or small decline in the production of steel ingots. Last month, however, there was a sharp increase. This has happened but once before since 1917 when the compilation of ingot production figures was begun and that was in the post-war year of 1919.

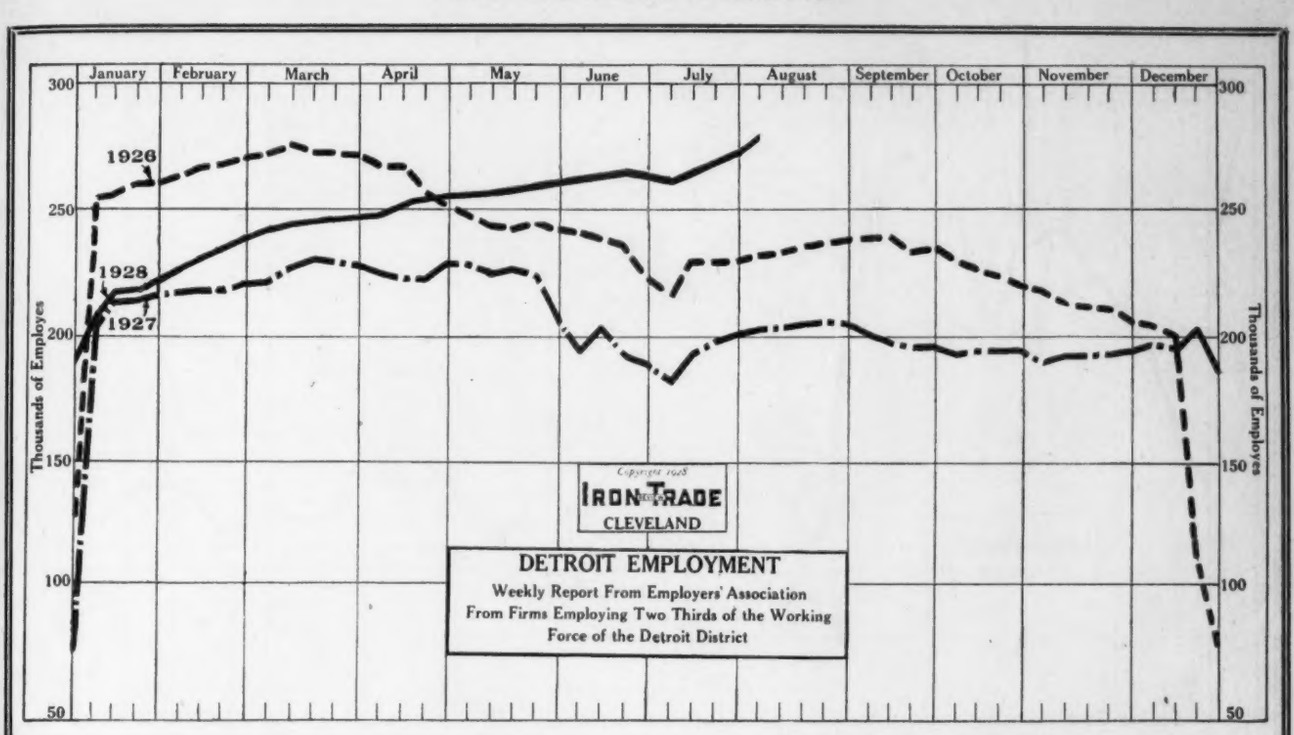
LAST month the daily average rate of ingot production was 152,463 tons. This compared with 144,000 tons in June and with 128,165 tons in July, 1927. It was the best rate of output for any July on the record, exceeding even the war years. The seven months total of ingot production compares with the previous high mark of 27,011,000 for the first seven months of 1926.

WHAT is the meaning and significance of this extraordinary showing? It means that general activity prevails in the great consuming lines of iron and steel. This is true of the automobile industry, of petroleum, and of building. In the latter, new high records are being made. These three lines constitute all but one, that of railroads, of the leading steel consuming industries. In addition there is activity among makers of building, road and farm machinery.

THE significance of the current summer's activity is that an even more active autumn is forecast. If business is moving at so rapid a clip in the normally dull period, it should move even faster under the influence of normal autumnal activity. Only the credit outlook is uncertain and so far this has had no adverse effect upon trade. There is no probability that it will, at least in the months immediately ahead.

IN THE steel industry, the most significant development is found in growing indications that the turn of prices is near at hand. With demand so heavy at this season, producers are gathering confidence that firmer levels will prevail later on.

The Business Trend

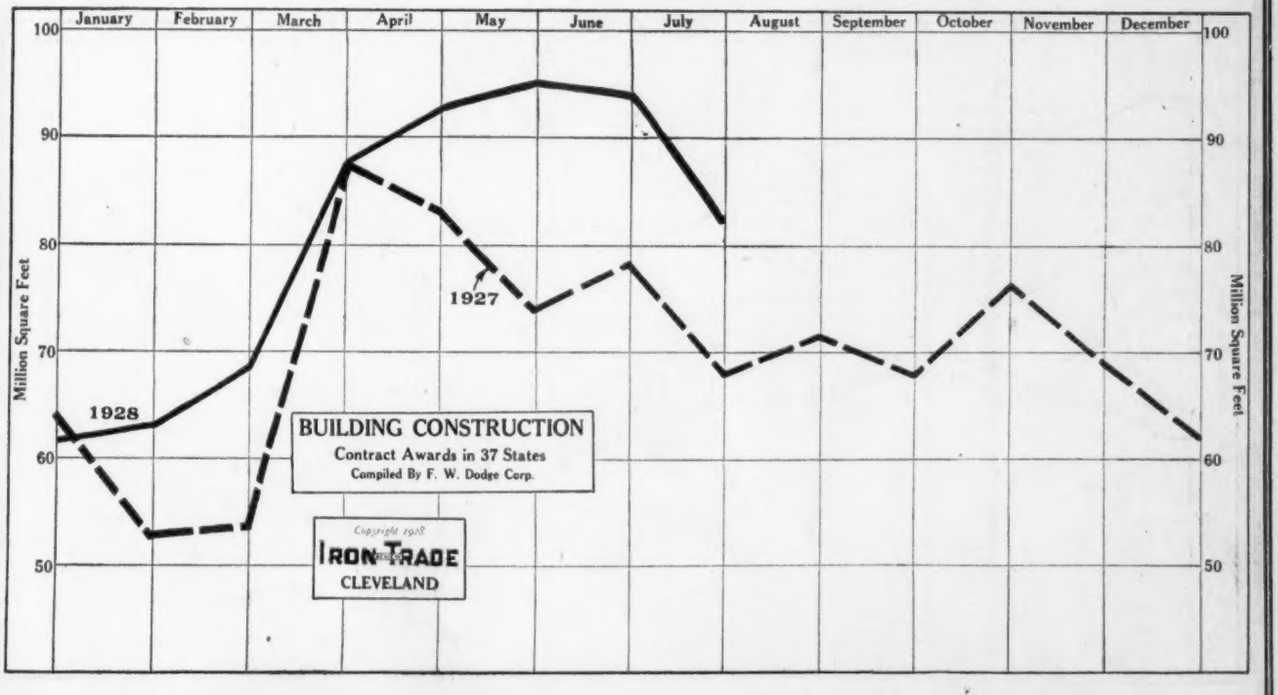


Detroit Employment

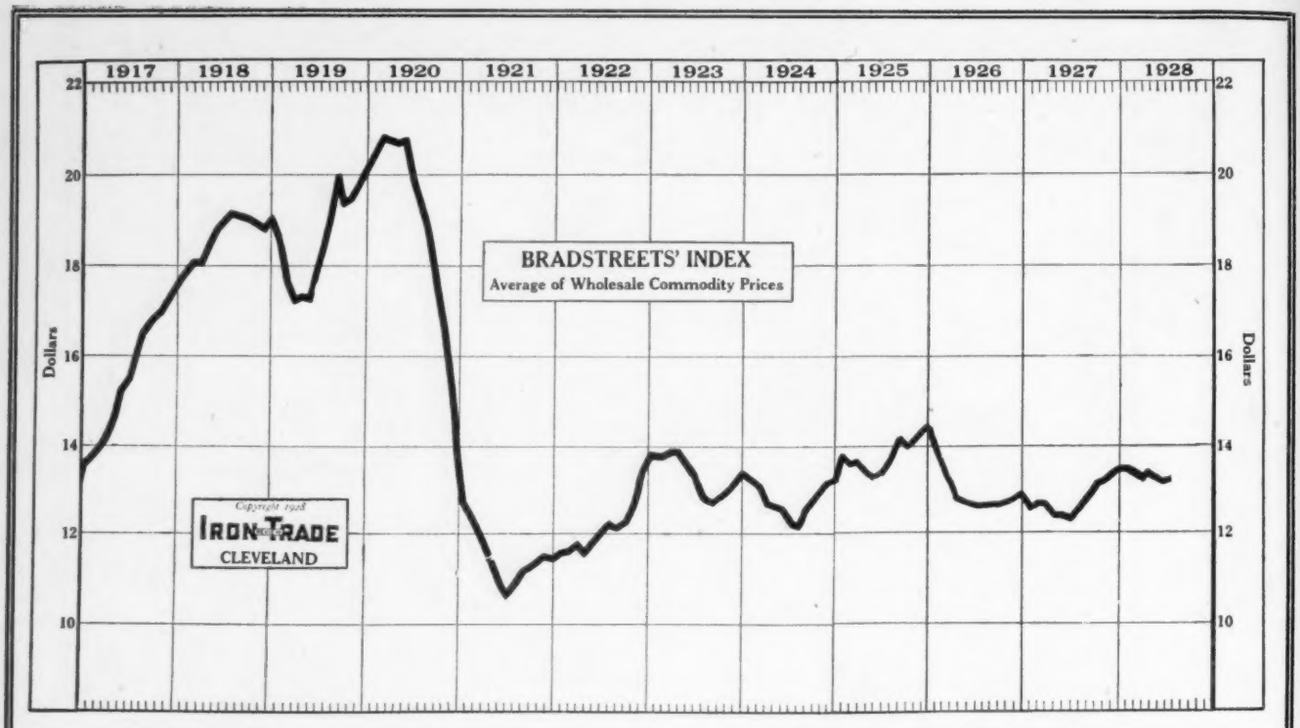
DURING the first week of August employment reported for the Detroit district, showed a total of 278,040 persons. This was an increase of 4000 over the preceding week and of 73,600 over the corresponding week of 1927. Never before has employment reached such a peak as this in Detroit. Usually the summer brings a recession in automobile employment and production but the present rate of payrolls in that territory now exceeds even the high mark for the spring of 1926.

Building Construction

A NEW high record for building construction has been established during the current summer. During July the volume of building contract awards was 82,125,100 square feet in 37 states. This total, as computed by the F. W. Dodge Corp. was unprecedented for that month. It compared with 94,000,000 square feet in June and with 68,000,000 square feet in July, 1927. Compared with the preceding month there was a normal seasonal decline of 13 per cent, while the gain over 1927 was 20 per cent.



The Business Trend

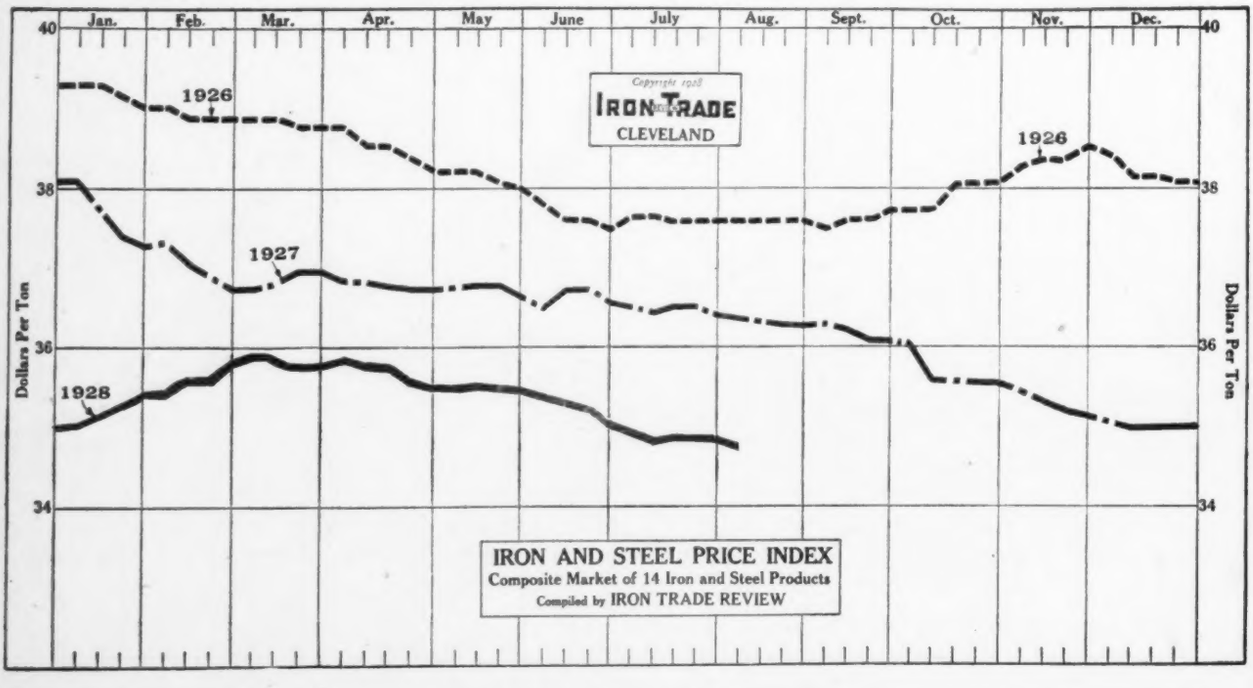


Bradstreet's Index

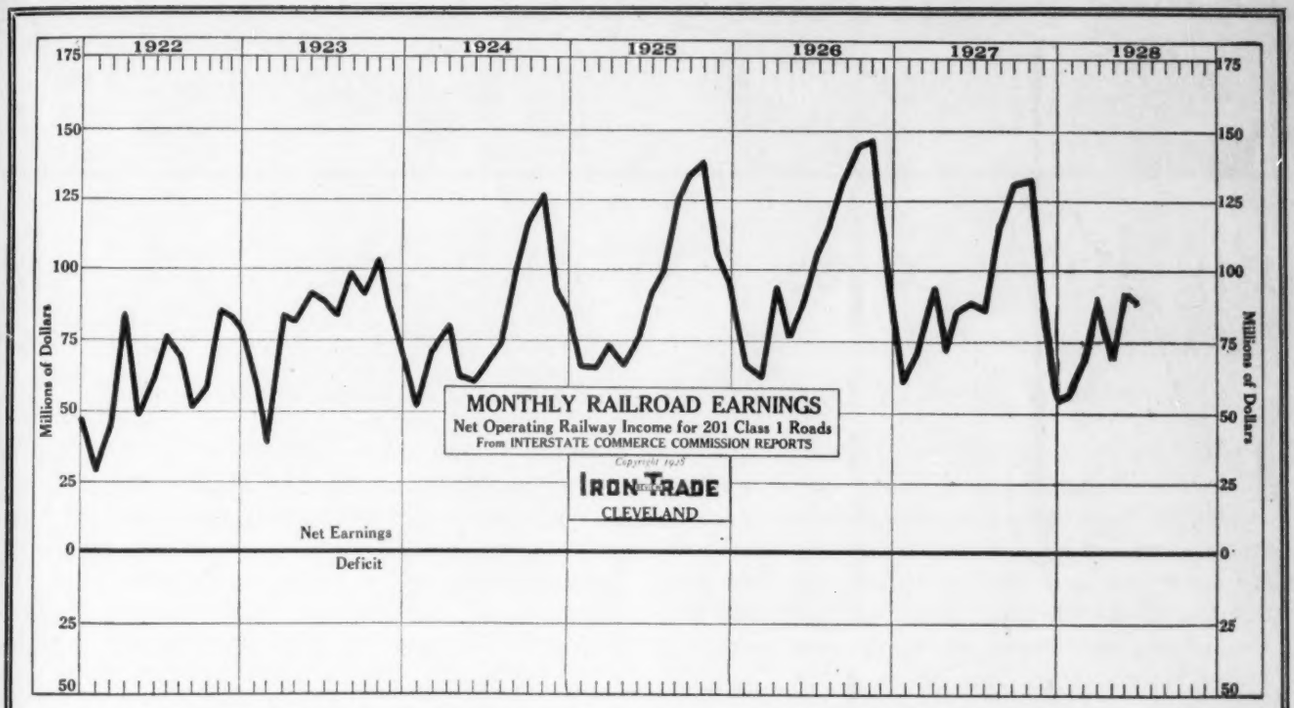
BRADSTREET'S index of wholesale commodity prices showed a small upward movement in July. The number for Aug. 1 showed an increase of three-tenths of 1 per cent over the preceding month. Since the beginning of the year there have been four advances and two declines in the general index with a net decline of 2.5 per cent. The price level is now 5 per cent above its base of one year ago. During July nine out of 13 groups of commodities comprising this index advanced.

Iron and Steel Price Index

WITH the exception of a brief period in the depression years of 1921 and 1922, IRON TRADE REVIEW'S composite market index is now at the lowest ebb of any time since early 1916. Standing at $34.89 a ton the first week of August the composite was only 32 per cent above the 1914 level. General industrial prices range about 50 per cent above 1914. Increasing demand and other indications have stimulated confidence on the part of steel producers that firmer prices are near at hand.



The Business Trend

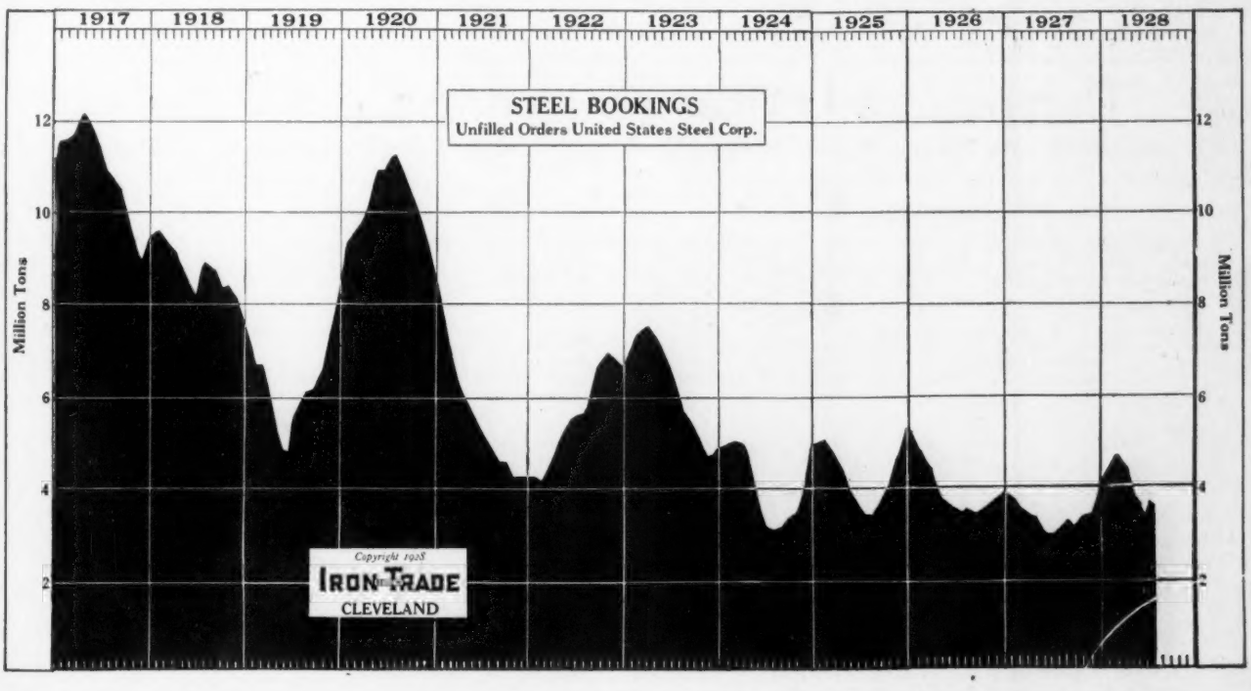


Railroad Earnings

DURING the first six months of 1928 Class I railroads had a net railway operating income of $462,025,000. This was at the annual rate of return of 4.36 per cent on their property investment. In the first half of 1927 these railroads earned $472,998,000 or 4.56 per cent on their property investment. Gross operating revenues for the first six months of the year declined 4 per cent. During the same period operating expenses showed a decline of 4.5 per cent from the year before.

Steel Bookings

UNFILLED orders of the United States Steel Corp. as of July 31 showed a decrease of 66,082 gross tons. Unfilled orders on the books at the close of the month, as reported by the Corporation totaled 3,570,927 tons against 3,637,009 tons one month before. The decline was less than 2 per cent. Compared with one year ago, however, an increase of 13.6 per cent is shown. The operating rate for steel plants in July was at an unusually high level for the season and this condition continues to prevail in August.



Pig Iron Sales Expand; Steel Holds

Middle Western Consumers Cover Heavily for Rest of Year—Sheets Advanced for Last Quarter—Steel Production Continues High

PIG iron is increasingly sympathetic to the sustained demand and firmer price tendency which have characterized finished steel recently, and for many producers the past week has been the most active selling one this year. Demand in the Middle West is of the proportions of a buying movement and many consumers, evidently believing pig iron to be a "buy" at current prices, have covered for the remainder of the year. The situation bears some of the earmarks of 1924, when the pig iron markets became active and buoyant preceding the presidential election and continued so into the following year.

Trend Toward Higher Steel Prices Marked

Finished steel, meanwhile, has bridged the middle of August—normally a slack period—with an inflow of orders and a rate of production equaling the July record. Automotive, oil country and building requirements for steel are unabated, while railroad needs for track material and equipment are a shade broader. The trend toward higher prices is marked. More producers are advancing heavy steel, independent sheet mills are opening fourth quarter books at $2 to $3 over present quotations, and strip makers may follow.

When pig iron producers at Cleveland sold 87,000 tons in the past week, largely to automotive interests, they set a weekly record for 1928 and brought sales for the past three weeks up to 176,000 tons. Pending inquiries at Chicago promise a record week. While sales at Pittsburgh are rather meager, specifications against contracts are heavy. Shipments at St. Louis are at the heaviest rate this year. New York interests have booked 16,000 to 18,000 tons. Price changes have been few but soft spots are disappearing.

Dealers Pinched Covering Short Scrap Sales

Coke prices are generally unchanged. In iron and steel scrap the price tendency is unmistakably higher and dealers are sometimes covering at losses. Semifinished steel is moving well to sheet and strip mills, northern Ohio producers taking more than their share of this business recently. One Youngstown semifinished maker is continuing $33 on sheet bars into the fourth quarter.

Independent sheet mills in the Mahoning valley

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Aug. 15 1928	July 1928	May 1928	Aug. 1927
PIG IRON				
Bessemer, del., Pittsburgh	$18.76	18.76	19.26	20.26
Basic, valley	16.00	15.95	16.20	17.50
Basic, eastern, del. eastern Pa.	19.00	19.00	19.10	19.75
*No. 2 foundry, del., Pittsburgh	18.26	18.26	18.86	19.26
No. 2 foundry, Chicago	17.50	17.60	18.20	19.50
*Southern No. 2 Birmingham	15.50	15.50	16.00	17.25
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	19.00
**No. 2X, Virginia furnace	20.50	20.50	20.50	21.50
**No. 2X, eastern, del. Phila.	20.76	20.76	21.26	21.26
Malleable valley	17.00	17.00	17.25	17.50
Malleable, Chicago	17.50	17.60	18.20	19.50
Lake Superior charcoal del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.01	18.76	18.76	18.76
Ferromanganese, del. Pittsburgh	109.79	109.79	109.79	94.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.75	2.60	2.55	3.00
Connellsville, foundry ovens	3.75	3.50	3.55	4.00
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	33.00	33.00	33.10	33.75
Sheet bars, open-hearth, Pittsburgh	32.00	32.25	34.00	33.50
Billets, open-hearth, Pittsburgh	32.00	32.25	33.00	33.00
Wire rods, Pittsburgh	42.00	42.00	44.00	43.00

	Aug. 15 1928	July 1928	May 1928	Aug. 1927
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.85	1.85	1.80
Steel bars, Chicago	2.00	2.00	2.00	1.95
Steel bars, Philadelphia	2.17	2.17	2.17	2.12
Iron bars, Chicago	2.00	2.00	2.00	2.00
Shapes, Pittsburgh	1.85	1.85	1.85	1.80
Shapes, Philadelphia	2.01	2.01	2.08	2.02
Shapes, Chicago	2.00	2.00	2.00	1.95
Tank plates, Pittsburgh	1.85	1.85	1.85	1.80
Tank plates, Philadelphia	2.10	2.10	2.05	2.12
Tank plates, Chicago	2.00	2.00	2.00	1.95
Sheets, black, No. 24, Pittsburgh	2.65	2.65	2.75	3.00
Sheets, blue anl., No. 10, Pittsburgh	2.00	2.00	2.00	2.25
Sheets, gal., No. 24, Pittsburgh	3.50	3.50	3.65	3.85
Sheets, black, No. 24, Chicago	2.80	2.80	2.85	3.15
Sheets, blue anl., No. 10, Chicago	2.15	2.15	2.20	2.40
Sheets, galvanized, No. 24, Chicago	3.65	3.65	3.80	4.00
Plain wire, Pittsburgh	2.40	2.45	2.50	2.40
Wire nails, Pittsburgh	2.55	2.55	2.60	2.55
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.50
SCRAP				
Heavy melting steel, Pittsburgh	15.50	14.10	15.00	15.00
Heavy melting steel, eastern Pa.	12.75	12.75	13.75	13.75
Heavy melting steel, Chicago	12.75	12.30	12.95	12.35
No. 1 wrought, eastern Pa.	14.50	15.25	15.25	15.95
No. 1 wrought, Chicago	12.30	12.30	13.05	13.45
Rails for rolling, Chicago	15.00	14.50	14.35	15.00

Current Prices for Rolled Steel Products

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

STEEL PLATES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.05c to 2.15c
New York, del.	2.125c to 2.225c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland	2.04c to 2.09c
Buffalo	2.00c
Coatesville, Sparrows Point	1.95c to 2.00c
Birmingham	2.05c
Pacific Coast, c.i.f.	2.25c

STRUCTURAL SHAPES

Pittsburgh	1.85c to 1.90c
Philadelphia, del.	2.01c to 2.11c
New York, del.	2.14c to 2.19c
Boston, del.	2.265c to 2.415c
Chicago	2.00c
Cleveland, delivered	1.87½ and 2.09c
Buffalo	2.00c
Bethlehem	1.95c to 2.00c
Birmingham	2.05c
Pacific Coast, c.i.f.	2.35c

BARS

SOFT STEEL

Pittsburgh	1.85c to 1.90c
Chicago	2.00c
Birmingham	2.05c
Buffalo	2.00c
Pacific Coast, c.i.f.	2.35c
Cleveland, mill	1.85c
Cleveland, delivered	1.87½ and 2.04c
Philadelphia, delivered	2.17c to 2.22c
New York, delivered	2.19c to 2.24c
Boston, delivered	2.265c to 2.415c
Pittsburgh, cold finishing	2.00c to 2.05c
Pittsburgh, forging quality	2.10c to 2.15c

RAIL STEEL

Chicago Heights	1.85c to 1.90c
Eastern mills	1.75c

IRON

Chicago	2.00c
New York, delivered	2.14c to 2.24c
Philadelphia, delivered	2.12c to 2.22c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet	1.85c to 1.90c
Chicago, billet	2.30c to 3.00c
Chicago, rail steel	2.00c to 2.60c
Chicago, rail steel, road and bridge work	1.85c to 1.95c
Youngstown, billet	1.90c to 2.00c

COLD FINISHED STEEL

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.10c
Shafting (turned, polished) Pittsburgh	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.15c

TIN AND TERNE PLATE

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25
Gary, Ind., base 10 cents higher.	
Long ternes, primes, No. 24	4.10c

*Price subject to quantity differentials.

SHEETS

SHEET MILL BLACK

No. 24, Pittsburgh base	2.60c to 2.65c
No. 24, Philadelphia, delivered	2.92c to 3.02c
No. 24, Gary, Indiana Harbor	2.75c
No. 24, Chicago, delivered	2.80c
No. 24, Birmingham, base	2.90c

TIN MILL BLACK

No. 28, Pittsburgh, base	2.85c to 2.90c
No. 28, Gary, base	2.95c to 3.00c

GALVANIZED

No. 24, Pittsburgh, base	3.45c to 3.50c
No. 24, Philadelphia, delivered	3.72c to 3.82c
No. 24, Gary, Indiana Harbor	3.60c
No. 24, Chicago, delivered	3.65c
No. 24, Birmingham, base	3.70c

BLUE ANNEALED

No. 10, Pittsburgh base*	2.00c
No. 24, Philadelphia delivered	2.32c to 2.42c
No. 10, Gary, Indiana Harbor	2.10c
No. 10, Chicago, delivered	2.15c
No. 10, Birmingham, base	2.20c

*Plus 10 cents for 45 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh, base	4.00c

FURNITURE

No. 24, Grade A, Pittsburgh	3.80c
No. 24, Grade B, Pittsburgh	3.60c

(*Turn to the following page*)

have announced fourth quarter prices as 2.75c, Pittsburgh, on black, 3.50c on galvanized and 2.00c to 2.10c, depending on width, on blue annealed. Autobody sheets are unchanged at 4.00c. A Chicago district independent is asking 2.85c, western mill, for black, 3.70c for galvanized and 2.10c for blue annealed. It may be several weeks before these levels enter the test period. Demand at Pittsburgh and Youngstown is large and diversified. At Chicago black and galvanized grades lead.

Bar Deliveries Recede at Pittsburgh

Soft steel bar demand, especially for automotive uses, is extensive enough at Pittsburgh to defer deliveries mildly. Pittsburgh plate mills are booking good tonnages for river barges, while at New York 7500 tons for oil tanks has been placed and at Chicago 10,000 tons of this business is pending. Structural steel awards are featured by a 17,000-ton department store in Brooklyn, while in New York 47,000 tons for subways and 17,000 tons for an office building are near the closing stage. An independent mill, following the leading maker, has announced 2.00c, Pittsburgh, or $3 over the current billing price, for heavy steel for fourth quarter delivery.

Price inequalities in hot and cold-rolled strip, for which automotive specifications continue heavy, are expected to be eliminated soon by advances. Cold finished steel production is markedly high in the light of the July record made by some producers. Manufacturing grades of wire are moving well and expectations of a good fencing business this fall are on the way to fulfillment. Small lot sales of reinforcing bars aggregate a high total, and for rail steel mills at Chicago a record year is probable.

Miscellaneous rail orders from western roads have enabled Chicago rail mills to expand their schedules slightly to 55 per cent. Great Northern is inquiring for 1000 ore and 500 coal in addition to 500 flat and 500 box cars put out last week. July freight car orders totaled only 582, the smallest in any month in two years, compared with 2422 in June and 2295 last July. The seven-month total stands at 28,916, against 44,460 in the like period of 1927 and 26,615 in 1926.

Steel Corporation Up to 80 Per cent

With 43 out of 53 open hearths lighted, one more than last week, independent steel production in the Mahoning valley is at its highest point this year. The Pittsburgh district is up three points this week, to 78 per cent. Bethlehem Steel Co. is exceeding the 80 per cent schedule for August, while Carnegie Steel Co. and Jones & Laughlin Steel Corp. are at 75 to 80 per cent. Of the 127 independent sheet mills in the Mahoning valley 107 are operating this week, a decline of one. Chicago steelmaking operations are unchanged, though slightly stronger, at 75 per cent. Steel corporation subsidiaries are at 80 per cent this week and the entire industry at 75 per cent, up 4 points. IRON TRADE REVIEW composite of fourteen leading iron and steel products is unchanged this week at $34.89.

Composite Market Average

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (Aug. 15, 1928)	$34.89
Last week (Aug. 8, 1928)	34.89
One month ago (July, 1928)	34.91
Three months ago (May, 1928)	35.54
One year ago (August, 1927)	36.25
Ten years ago (August, 1918)	56.67
Fifteen years ago (August, 1913)	25.97

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED
SEE ALSO PRECEDING PAGE

HOOPS, BANDS, STRIP

Hot strip, under 3-inch, Pitts 2.05c to 2.20c
Hot strip, 3 to 6-inch, Pitts. 1.90c to 2.00c
Hot strip, 6 to 12-inch, Pitts 1.80c to 1.90c
Hot rolled strip, 12 to 24-inch 16 gage and heavier, coils or cut lengths, 1.85c plate basis, or 2.00c blue annealed basis.
Hot strip, bands, under 3-in., Chi. 2.30c
Hot strip, bands, 3 to 6-in., Chi. 2.20c
Hot strip, bands, 6 to 12-in., Chi. 2.00c
Hot strip, 12 to 24 in., Chi.... 2.10c
blue annealed sheet basis.
Cold rolled strip, hard coils, 1½ inches and wider by 0.100-inch and heavier, base Pitts., Cleve., (over 3 tons)..... 2.65c to 2.75c
Pitts., Cleve., (1-3 tons) ..... 2.90c to 3.00c
Worcester, Mass. 3.05c

ALLOY STEEL

Hot Rolled

F.o.b. Pittsburgh or Cleveland

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differential	Net price 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2500	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 1.25-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanadium	1.50	4.15
Carbon Vanadium	0.95	3.60
9250	0.25	2.90

TUBING

BOILER

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch 42½
Charcoal iron, 3¼ to 4½-inch 9
Seamless hot rolled 3¼ to 3½-inch.... 56

Further discounts of six 5 per cents for 21,000 pounds or more on lap welded steel. On charcoal two 10's and one 2½ on 12,000 pounds or more.

COLD DRAWN SEAMLESS

F.o.b. mill in desirable quantities

Random length over 5 feet .....55 per cent
Selected lengths, 1 to 18 feet .....53 per cent

WIRE PRODUCTS

To Jobbers in Carloads

F.o.b. Cleveland and Pittsburgh base
Dealers 10 cents per 100 pounds extra

Bright plain wire, No. 9 gage.. 2.40c
Annealed fence wire 2.55c
Galvanized wire, No. 9 gage.... 3.00c
Barbed wire, painted 2.95c
Barbed wire, galvanized 3.20c

Per 100 lbs.

Wire nails $2.55
Galvanized nails, plus differ. 4.55
Polished staples 3.00
Galvanized staples 3.25
Coated nails, 100 lb. kegs, Sept. 1, 1926 extras apply.... 2.55
Woven wire fencing (retailers) 12½ gage, 26-in. high, 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts..... $20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

CAST IRON WATER PIPE

Prices per net ton

Class B Pipe

Six-inch and over, Birming'm..$34.00 to 35.00
Four-inch, Birmingham ..... 38.00 to 39.50
Four-inch, Chicago ..... 46.20 to 47.20
Six-inch to 24-inch, Chicago..... 42.20 to 43.20
Four-inch, New York ..... 41.50 to 42.60
Six-inch and over, New York.. 37.60 to 38.60
Standard fittings, Bir. base..... $100.00

Six to 24-inch base; over 24-inch; plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

IRON AND STEEL PIPE

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

CHAIN, PILING, CUT NAILS

Cut nails, c.l., f.o.b. mills..... 2.70c
Cut nails, l.c.l. f.o.b. mills..... 2.80c
Chain, 1-in., proof coil, Pitts..... 6.00c
Sheet piling base, Pittsburgh.. 2.25c

RAILS, TRACK MATERIAL

Standard bessemer rails, mill $43.00
Standard open-h'th rails, mill $43.00
Relaying rails, St. Louis.....$24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb..$22.00 to 27.00
Light rails, 25 to 45, mills..... $36.00
Angle bars, Chicago base..... 2.75c
Spikes, railroad, Pittsburgh.... 2.80c
Spikes, small railroad, ⅞-inch and smaller, Pitts..... 2.80c
Spikes, boat and barge, Pitts. 3.00c
Spikes, railroad, Chicago 2.80c
Track bolts, Pitts., steam roads 3.80c
Track bolts, Pitts., stand, jobbers .....70 off list
Track bolts, Chicago 3.80c
Tie plates, Chicago, Pitts..... $43.00

BOLTS AND NUTS

F.o.b. basing points, Pittsburgh, Cleveland Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread ..... 60 to 70 off
Rolled thread ⅜x6 and smaller take 10 per cent lower list.
Eagle list ..... 60 to 70 off

MACHINE BOLTS

All sizes, cut thread ..... 60 to 70 off
Rolled thread ⅜x6 and smaller take 10 per cent lower list.
Lag screws ..... 60 to 70 off
Plow bolts, Nos. 1-2-3-7 heads 60 to 70 off
Tap bolts ..... 60 to 70 off
Blank bolts ..... 60 to 70 off
Stud bolts without nuts..... 60 to 70 off
Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 20, 10 and 5 with 2½ off in bulk.
Tire bolts .....60-5 off

Nuts

Semifinished ..... 60 to 70 off

HEXAGON CAP SCREWS

Milled .....80-10-10 off
Upset 1 in. diam. and smaller .....85-5 off

SQUARE HEAD SET SCREWS

Milled .....80-10 off
Upset 1 in. diam, and smaller.....80-10-10 off

RIVETS

Strust., c.l., Pitts-Cleve..... 2.80c to 2.90c
Structural, c.l., Chicago..... 3.00c
**⅞-inch and smaller, Pitts.....70 and 10 off
Chi., Cleve. .....70 to 70 and 10 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

WASHERS

Wrought, c.l., Pitts. dist.....$6.50 to 6.75 off
Wrought, c.l., Chicago dist.....$6.70 to 6.90 off
Lock: To dealers .....85-5 off
Lock: To consumers .....85 off

Raw Materials and Semifinished Products

SEMIFINISHED MATERIAL

Prices Per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth .....$32.00 to 33.00
Pittsburgh, bessemer ..... 32.00 to 33.00
Youngstown 32.00
Cleveland 33.00
Philadelphia ..... 37.30 to 38.30
Chicago ..... 32.00 to 33.00
Forging, Chicago 38.00
Forging, Pittsburgh 38.00
Forging, Philadelphia 43.30

SHEET BARS

Pittsburgh .....$32.00 to 33.00
Youngstown 33.00
Cleveland ..... 32.50 to 33.00
Chicago 35.00

SLABS

Pitts., Young., and Cleve. .....$32.00 to 33.00

WIRE RODS

Pittsburgh, Cleveland $42.00
Chicago 45.00

SKELP

All grades, Pittsburgh ..... 1.85c to 1.90c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%.... $4.55
Mesabi bessemer, 51½% 4.40
Old range bessemer 51½% 4.40
Mesabi nonbessemer, 51½%..... 4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63%..... 8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent ..... nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45-55% iron, 6-8% manganese.. 11.00
North African low phosphorus 10.00 to 11.00
Swedish foundry or basic, 65%....none offered
Spanish and North African basic, 50 to 60 per cent..... 8.50 to 10.00
Newfoundland foundry, 55%.... 8.50 to 9.00

MANGANESE ORE

Prices do not include duty of 1 cent per pound of metallic manganese contained.

Brazilian .....36 to 38 cents
Indian .....36 to 38 cents
Caucasian (53-55 per cent) ....38 to 40 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton....$16.50 to 17.00
Washed gravel, imported duty paid, east. tidewater, net ton 15.50

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania .....$43.00 to 46.00
Ohio ..... 43.00 to 46.00
Illinois ..... 43.00 to 46.00
Kentucky ..... 43.00 to 46.00
Missouri ..... 43.00 to 46.00
Maryland ..... 43.00 to 46.00
Georgia and Alabama ..... 40.00 to 45.00

Second Quality

Pennsylvania ..... 35.00 to 38.00
Ohio ..... 35.00 to 38.00
Illinois ..... 35.00 to 38.00
Kentucky ..... 35.00 to 38.00
Missouri ..... 35.00 to 38.00
Maryland ..... 35.00 to 38.00
Georgia and Alabama ..... 30.00 to 35.00

SILICA BRICK

Pennsylvania 43.00
Joliet, Ill., East Chicago, Ind..... 52.00
Birmingham ..... 50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½ 65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base
Dead-burned grain magnesite.... 40.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base.
9 x 4½ x 2½ 45.00

Pig Iron

Sales Heavier in Middle Western Territory—Moderate Buying Movement Under Way for Fourth Quarter—Prices Show More Firmness

SALES of pig iron in the past week mounted to well over 100,000 tons, in one of the busiest periods for some producers so far this year. The center of activity is in Ohio, Indiana and Michigan, and furnace interests at Cleveland report a total of 87,000 tons booked during the week, mainly in those districts, with the automobile industry figuring in round tonnages. That orders have been unusually heavy for midsummer is further evidence by the fact Cleveland interests' sales in the past three weeks have aggregated 176,000 tons. Continued demand on a large scale is reported at Chicago, with the possibility of this week's sales setting a record. Bookings in New York territory aggregate 18,000 tons. August shipments appear to be higher than those of July.

PITTSBURGH, Aug. 14.—Vacations here evidently have created a featureless period in the pig iron market. Occasional spot market sales of limited tonnages are noted. Both merchant and steelworks furnaces report better shipping instructions from the sanitary ware, radiator and cast iron pipe manufacturers but jobbing foundries ordinarily taking four carloads monthly continue with a single carload for such a period. The Titusville Iron Works inquiry still is pending. The company may purchase only a portion of the 1000 tons of foundry iron for which it inquired. Some middle interests have committed themselves to relatively low figures, and now are endeavoring to sell such orders to merchant and other stacks. Certain merchant furnaces are firming up quotations and are naming $16.75 and $17, valley, for No. 2 plain. However, $16.50 has not disappeared. No interest is noted in the market for basic, nominally $16, valley. Bessemer is $17 and selling in small quantities.

Boston, Aug. 14.—Pig iron orders increased during the past week to approximately 6000 tons. The Mystic Iron Works booked 2000 tons while a Buffalo furnace also took an equal amount. While a generally better feeling exists, it can be stated that Buffalo iron still is procurable at $16.50 on No. 2X in carlots, and this can be shaded on more acceptable tonnages. On No. 1X $17 appears to rule for carlots.

New York, Aug. 14.—Sales of pig iron in this district the past week aggregated 16,000 to 18,000 tons. Thatcher Furnace Co. bought about 5000 tons of No. 2 plain for Garwood, N. J. The price is reported to have been less than $19.50, delivered at Garwood, and it is understood Buffalo and eastern Pennsylvania irons are involved. Indications are buying will continue good. One inquiry is this territory is for 4000 to 5000 tons; another is for 1200 tons. Buffalo furnace stacks are somewhat smaller as four furnaces have been put out of blast during the past month. Barge canal operators are unwilling to take on any charters for shipment of iron from Buffalo to New York harbor at $2. The usual minimum is $2.50 and it appears certain $2.25 cannot be shaded. Indications are stocks of Buffalo iron in store at Elizabethport, N. J., are not in excess of 3000 to 4000 tons.

Buffalo, Aug. 14.—A Buffalo furnace interest that has been taking considerable business in the East, announces a $16.50 base for delivery to New England, with full differentials. The price of $17, base, for the Buffalo district has not wavered in months. The General Electric Co. is in the market for 5000 tons of foundry and malleable grades. An inquiry for 4000 tons of foundry iron comes from New England. An Elmira interest wants 500 tons of foundry and malleable. Among the lots sold is 4000 tons of foundry and malleable for a district implement maker; 600 tons of foundry and 500 tons of malleable, with a large number of smaller lots. Silvery iron is selling well. Another furnace will be placed in blast soon.

Cleveland, Aug. 14.—Cleveland furnace interests booked 87,000 tons of pig iron in the past week for delivery over the remainder of the year. In the last three weeks they have placed approximately 176,500 tons on their books. While a moderate size buying movement is underway for fourth quarter, heavier demand is yet to come. Shipments are larger than the July rate, furnace stocks are being reduced rapidly, and standard lines of manufacture with known requirements for fourth quarter seem eager to buy ahead on today's market. The past week's sales reported by one of the leading merchant producers is the largest of any week so far this year. One Cleveland maker booked heavily is no longer aggressive for business, and the other is showing a stronger price attitude. While $16.25, base, Cleveland, has applied frequently in outside competitive territory, it is doubtful if that price can now be done on ordinary business, while $16.50 and $16.75 are the more general quotations. The price for local shipment continues $17.50, base, furnace. While $17.50 to $18, base, lake furnace, still is the quotable range in lower Michigan, conditions are stronger.

An added element of strength in the western Ohio, Indiana and Michigan district is the fact the Toledo Furnace Co. will blow out Furnace A about Aug. 22 for relining, leaving only Furnace B in operation there. Furnace A has been in continuous operation since Nov. 6, 1919, believed to be the longest run in the history of American pig iron manufacture. While it is rated at 550 tons per day capacity it has made as much as 846 tons a day, and in its long run has produced approximately 1,835,000 tons of pig iron.

Philadelphia, Aug. 14.—Pig iron demand is quiet. Buying involves mainly small lots for immediate shipment. Foundry iron is $19.50, base, eastern Pennsylvania furnace.

Chicago, Aug. 14.—Pig iron sales by northern furnaces for the re-

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Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$17.00
Bessemer, del., Pittsburgh	18.76
Basic, valley furnace	16.00
Basic, del., Pittsburgh	17.76
Basic, Buffalo furnace	17.00
Basic, del., eastern Pa.	18.75 to 19.25
Malleable, valley furnace	17.00
Malleable, del. Pittsburgh	18.76
Malleable, del. Cleveland	18.00
Malleable, Chicago furnace	17.50
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.50 to 21.00
No. 1 foundry, Chicago furnace	18.00
No. 1X, eastern del., Phila.	21.26
No. 1X, Buffalo furnace	18.50
No. 2 foundry, valley furnace	16.50 to 17.00
No. 2 foundry, del., Pittsburgh	18.26 to 18.76
No. 2 plain, Buffalo furnace	17.00
No. 2 foundry, Chicago, furnace	17.50
No. 2 foundry, Granite City	19.00 to 19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.00
No. 2 plain, del., Phila.	20.26
No. 2 plain, Virginia furnace	20.00
No. 2 plain, N. J., tidewater	19.01 to 19.51
No. 2 Alabama, Birmingham	15.50
No. 2 Alabama, del., Cincinnati	19.19
No. 2 Tenn., Birmingham base	15.50
No. 2 Tenn., del., Cincinnati	19.19
No. 2 Alabama, del. Chicago	21.51
No. 2 Ala., del. Chicago, river-rail	21.51
No. 2 Alabama, del. Cleveland	21.76
No. 2 Alabama, del. St. Louis	19.92
No. 2X, east, N. J., tidewater	19.51 to 20.01
No. 2X, eastern, del. Phila.	20.76
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	20.91 to 21.41
No. 2X, Virginia furnace	20.50
Gray forge, val., del., Pittsburgh	18.01 to 18.26
Low phos., standard, valley	26.50
Low phos., standard, Phila	24.26 to 24.76
Low phos. copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del., Chicago	27.04

CANADIAN PRICES

No. 2 foundry, del. Toronto	23.10 to 23.60
No. 2 foundry, del. Montreal	24.50 to 25.00
Malleable, del. Toronto	23.10 to 23.60
Malleable, del. Montreal	24.50 to 25.00
Basic, del. Montreal	23.50 to 24.00

Silvery iron, Jackson county (Ohio) furnace in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$40.50; 16—$43.

Coke

Foundry Specifications Increase —Furnace Demand Quiet—Alabama Invades Northern Markets

SPECIFICATIONS for foundry coke continue to increase, especially from manufacturers of sanitary ware, radiators and cast iron pipe. Connellsville producers are well booked for the remainder of the year. Demand for beehive furnace coke is quiet. Small lots for prompt delivery usually are sold at $2.75. By-product coke makers at Birmingham are selling along the Ohio river.

Pittsburgh, Aug. 14.—Purchases of beehive coke by the Jones & Laughlin Steel Corp. in the past two weeks, involving approximately 400 tons daily for the remainder of the month, apparently have taken that interest out of the market, although some factors in the trade expect additional purchases may be made for September delivery. Other furnace coke demand developing in the spot market is confined to small lots, usually at $2.75. While some makers will not put ovens in operation for less than $3 a ton, others would do so for $2.75, provided they could be assured demand would be sustained. Some buyers of nonmetallurgical coke are inquiring for limited tonnages for extended delivery, and quotations run as high as $3. Demand for heating coke so far is negligible but is expected to grow from this time forward. Specifications for foundry coke are increasing, especially those from sanitary ware, radiator and cast iron pipe manufacturers, but jobbing foundries still lag. While one seller offers so-called standard foundry fuel at $3.50, others want $3.75 to $4.50, and some $4.75 and $4.85.

Production of coke in the Connellsville region in the week ended Aug. 4 was 29,030 tons, compared with 27,330 tons in the preceding week, according to the *Connellsville Courier*.

Cincinnati, Aug. 14.—Reports that a Birmingham coke producer has reduced the price of by-product foundry coke along the Ohio river in southern Indiana and in western and northern Ohio to $3 and is quoting in Cincinnati territory at $3.50 to $4.50 are heard by local dealers. In few instances have any attempts been made to meet these prices, in Ohio at least. By-product foundry coke specifications are holding up well to the July levels.

New York, Aug. 14.—Specifications against coke contracts are showing considerable improvement and current coke shipments into this district are the best so far this quarter.

St. Louis, Aug. 14.—Hot weather and lack of new business has adversely affected the melt of pig iron, and this is reflected in a slowing down in foundry coke shipments. Most melters are accepting tonnages due on contract.

Coke Prices

Prices per Net Ton

Beehive Ovens	
Connellsville furnace	$2.75 to 3.00
Connellsville foundry	3.75 to 4.50
New River foundry	6.50 to 7.00
New River furnace	6.50
Wise county foundry	4.50 to 5.25
Wise county furnace	3.75 to 4.25
By-Product Foundry	
Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham	5.00
Indianapolis, del.	8.25
Ashland, Ky.	7.00
Portsmouth, O.	7.00
Detroit, ovens	8.50
Buffalo, ovens	9.00

Ferroalloys

Specify on Second Half Ferromanganese—Spiegeleisen Demand

New York, Aug. 14.—More consumers have begun to specify against their second half ferromanganese contracts, indicating a substantial portion of the stocks laid in on first half contracts at $100 price have been consumed. Little new business is reported, the bulk of the trade being covered for second half at $105, duty paid, tidewater. English high manganese spiegeleisen, containing 24 to 25 per cent manganese, is being offered at $32, duty paid, tidewater. Specifications show 350 tons of this material were imported in the United States during June, including 250 tons at New Orleans, 50 tons at New York and 50 tons at Boston. Domestic producers report an increase in specifications against spiegeleisen contracts. This is the best summer for spiegeleisen demand in many years. Spot carloads of 19 to 21 per cent continue at $33, furnace.

Special ferroalloys are unchanged and firm, with good specifications on contracts. A few sales of tungsten have been made, but the market generally is considered quiet and firm, $10.75 to $11, a short ton unit.

Pig Iron Is More Active

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mainder of the year are increasing in volume, and a number of the larger users show more interest in the market. Several large tonnages are pending which may bring this week's sales up to a high total. August sales so far are equal to those of July for the comparable period. Granite City pig iron is being sold in territory west and south and is competing with Chicago iron as far as freight rate limitations will permit. Some boat iron is being offered at the prevailing market. Foundry iron stocks of the former Northwestern Malleable Iron Co., Milwaukee, are being cleaned up, and ten carloads are being offered by an outside interest at slightly under the market. The Chicago base furnace price is steady at $17.50. Several lots of 600 to 1500 tons have been closed recently. Several sales of southern high silicon iron in Illinois are reported.

Cincinnati, Aug. 14.—Reports in this territory that lake producers have advanced their prices about 50 cents a ton for foundry iron today encouraged local interests in their belief that the market is on the verge of an advance. The price quoted here is $16.50, Cleveland and Columbus base. There is no other change in this territory. The Ironton price still is $19, and southern iron still holds at $15.50, base, Birmingham. One distributor reports sale of 5500 tons of northern foundry in scattered lots, another booked 1100 tons. A southern Ohio melter is in the market for 500 to 1500 tons of northern foundry iron.

St. Louis, Aug. 14.—New buying of pig iron continues only moderately active, but shipments are heavy. Prices seem firmer. The leading local producer reports August shipments to date indicate this month's will be the largest so far this year. The total also will exceed that of August, 1927. Sales in the past week totaled approximately 6000 tons.

Birmingham, Ala., Aug. 14.—Sales of pig iron are not frequent, but the probable make of the next 40 days has been covered. The price is firm at $15.50, base, Birmingham.

Toronto, Ont., Aug. 14.—Foundry and malleable pig iron sales were on a more extensive scale the past week. The melt remains high. In addition to the steady spot demand, orders against contracts are coming in regularly and the movement of foundry and malleable iron is much better than it was during the summer season a year ago. Prices are firm.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent tidewater, duty paid	$105.00
Ferromanganese, del. Pittsburgh	109.79
Spiegeleisen, 19 to 21 per cent domestic furnace	33.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do., less carload	88.50
Do., 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	96.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Scrap

Higher Prices Developing for Steel Scrap—General Upward Movement Seems Started

CONSUMERS of heavy melting steel are paying decidedly higher prices for tonnage in all markets and it develops that stocks in melters' and dealers' hands are low. Short interests find difficulty in obtaining material for their contracts. Consumption is at a high rate.

Chicago, Aug. 14.—A stronger tone prevails in iron and steel scrap in this district, reflected more in dealer transactions than in prices paid by consumers. Heavy melting steel is quoted at $12.75 to $13.25 by virtue of steady orders placed by both Indiana Harbor and Gary steelworks at the latter figure. Sales at $13.25 total more than 5000 tons, the combination of a number of individual sales. A sale of about 300 tons of railroad malleable has been made at $13.50, gross, or 50 cents above the recent level. Both railroad and agricultural cast scrap are about 25 cents higher in consumer sales. A sale of machine shop turnings at $7 has substantiated a 50-cent advance. Miscellaneous, short rails and rerolling rails are 25 to 50 cents higher.

New York, Aug. 14.—A stronger tone prevails in scrap, with actual advances in dealers' buying prices on at least two grades. Dealers now are offering to pay $7 to $7.50, New York, on stove plate for mill consumption, against $6.75 to $7 recently, and $6 to $6.50 on skeleton steel, although $6.25 appears to be the general figure. This latter range is an advance

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except Detroit where dealers' buying prices are shown

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$10.25 to 10.50
Boston, dealers	8.75 to 9.25
Buffalo, No. 1	14.50 to 15.00
Buffalo, No. 2	13.00 to 13.25
Chicago	12.75 to 13.25
Cincinnati, deal	11.00 to 11.50
Cleveland, No. 1	13.00
Cleveland, No. 2	12.25 to 12.50
Detroit, No. 1	10.50 to 11.00
Eastern Pa.	12.50 to 13.00
Eastern Pa., No. 2	10.50 to 11.00
Bethlehem delivery	12.50 to 13.00
N. Y., deal., R. R.	9.25 to 9.85
N. Y. deal., yd.	6.50 to 7.00
Pittsburgh, No. 1	15.50 to 16.00
St. Louis, No. 1	12.00 to 12.50
St. Louis, No. 2	10.50 to 11.00
Valleys, No. 1	14.00 to 14.25

COMPRESSED SHEETS

Buffalo	13.00 to 13.25
Chicago	11.50 to 12.00
Cleveland	12.00 to 12.50
Detroit	10.25 to 10.75
Pittsburgh	14.75 to 15.25
Valleys	14.00 to 14.50
E. Pa. new mat	11.00 to 11.50

BUNDLED SHEETS

Buffalo	8.25 to 8.75
Cincinnati, deal	9.00 to 9.50
Cleveland	11.50 to 12.00
Eastern Pa.	9.50 to 10.00
Pittsburgh	13.75 to 14.25
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.50 to 9.00
Detroit	7.00 to 7.50
St. Louis	7.75 to 8.25

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Boston	7.50 to 8.50
Buffalo	16.00 to 16.50
Chicago	15.00 to 15.50
Cincinnati, deal	15.75 to 16.25
Detroit	11.00 to 11.50
St. Louis	15.00 to 15.50

STOVE PLATE

Birmingham	12.00 to 12.50
Boston, consumers	10.00
Buffalo	13.00 to 13.50
Chicago, net	11.50 to 12.00
Cinn., deal., net	8.00 to 8.50
Cleveland	12.00 to 12.50
Detroit, net	10.75 to 11.25
Eastern Pa.	11.00
N. Y., deal., mill	7.00 to 7.50
Pittsburgh	11.50 to 12.00
St. Louis	11.00 to 11.50

SHOVELING STEEL

Chicago	12.75 to 13.25
Pittsburgh	11.00 to 11.50
St. Louis	10.50 to 11.00

KNUCKLES, COUPLERS SPRINGS

Buffalo	15.00 to 15.50
Chicago	14.00 to 14.50
Eastern Pa.	15.50 to 16.00
Pittsburgh	16.00 to 16.50
St. Louis	12.00 to 12.50

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.00 to 16.50
Cincinnati, deal	12.75 to 13.25
Eastern Pa.	17.50 to 18.50
Pitts. billet and bloom crops	19.00 to 19.50
Cleve. billet and bloom crops	17.00 to 17.50

FROGS, SWITCHES, GUARDS

Chicago	13.50 to 14.00
St. Louis	11.75 to 12.25

ANGLE BARS—STEEL

Buffalo	14.00 to 14.50
Chicago	14.50 to 15.00
St. Louis	11.75 to 12.25

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	9.50 to 10.00
Boston, dealers	8.50 to 9.00
Buffalo, No. 1	11.00 to 11.50
Buffalo, No. 2	14.00 to 14.50
Chicago, No. 1	12.30 to 12.90
Chicago, No. 2	12.75 to 13.25
Cinn., No. 2	11.00 to 11.50
Eastern Pa.	14.50
N. Y., No. 1 deal	11.00 to 11.50
Pittsburgh, No. 1	12.00 to 12.50
Pittsburgh, No. 2	15.50 to 16.00
St. Louis, No. 1	9.00 to 9.50
St. Louis, No. 2	11.00 to 11.50

WROUGHT PIPE

Boston, dealers	8.00 to 8.50
Eastern Pa.	12.00 to 12.50
Buffalo	12.00 to 12.50
New York, deal	8.25 to 8.75

YARD WROUGHT

Boston	8.00 to 8.50
Eastern Pa.	14.00 to 14.50

BUSHELING

Buffalo	13.00 to 13.25
Chicago, No. 1	11.00 to 11.50
Chicago, No. 2	8.50 to 9.00
Cinn., No. 1 deal	10.00 to 10.50
Cinn., No. 2	5.50 to 6.00
Cleveland, No. 2	9.00 to 9.25
Detroit, No. 1	9.75 to 10.00
St. Louis, No. 1	9.00 to 9.50
Detroit, mixed	7.25 to 7.50

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	6.50 to 7.00
Cincinnati, deal	7.50 to 8.00
Cleveland	7.00 to 7.50
Detroit	5.50 to 6.00
Eastern Pa.	10.00 to 10.50
New York, deal	6.50 to 7.00
Pittsburgh	10.00 to 10.50
St. Louis	7.00 to 7.50

MIXED BORINGS, TURNINGS
For blast furnace use

Boston, dealers	5.00 to 5.50
Buffalo	9.00 to 9.50
Cincinnati, deal	8.00 to 8.25
Cleveland	9.00 to 9.25
Detroit	7.50 to 7.75
Eastern Pa.	9.50 to 10.00
New York, deal	5.75 to 6.25
Pittsburgh	11.00 to 11.50

CAST IRON BORINGS

Birmingham, chem.	13.00 to 13.50
Birmingham, plain	8.00 to 9.00
Boston, chem.	9.50 to 10.00
Boston, dealers	5.00 to 5.50
Buffalo	9.00 to 9.50
Chicago	9.25 to 9.75
Cincinnati, deal	8.00 to 8.25
Cleveland	9.00 to 9.25
Detroit	7.50 to 7.75
Eastern Pa.	10.50
Eastern Pa., chem.	14.50 to 15.00
New York, deal	5.75 to 6.25
Pittsburgh	11.00 to 11.50
St. Louis	8.25 to 8.75
Valleys	13.50

PIPES AND FLUES

Chicago, net	8.50 to 9.00
Cincinnati, deal	7.00 to 7.50
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	11.25 to 11.75
Chicago, net	11.25 to 11.75
Cincinnati	8.50 to 9.00
Eastern Pa.	11.50
New York, deal	7.50 to 8.00
St. Louis	11.00 to 11.50

FORGE FLASHINGS

Boston, dealers	6.50 to 7.00
Buffalo	11.50 to 12.00
Chicago	9.00 to 9.50
Cleve., over 10 in.	11.50 to 11.75
Detroit	9.00 to 9.50
Pittsburgh	11.50 to 12.00

FORGE SCRAP

Boston, deal	5.50 to 6.00
Chicago	15.50 to 16.00
Eastern Pa.	10.50 to 11.00

ARCH BARS AND TRANSOMS

Chicago, net	19.75 to 20.25
St. Louis	18.25 to 18.75

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal	6.75 to 7.00
Buffalo	11.50 to 12.00
Chicago	9.75 to 10.25
Cleveland	12.00 to 12.25
Eastern Pa.	10.50 to 11.00
Pittsburgh	13.50 to 14.00
St. Louis	9.50 to 10.00

STEEL CAR AXLES

Birmingham	15.00 to 15.50
Boston, ship. point	14.50 to 15.00
Buffalo	15.75 to 16.25
Chicago	17.65 to 18.20
Cleveland	16.00 to 16.50
Eastern Pa.	19.00 to 20.00
Pittsburgh	18.00 to 18.50
St. Louis	18.00 to 18.50

SHAFTING

Boston, ship. point	11.50 to 12.00
Chicago	17.35 to 17.90
Eastern Pa.	16.50 to 17.00
New York, deal	13.50 to 14.00
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	12.00 to 12.50
Boston, con.	14.00 to 14.50
Buffalo, iron	12.25 to 12.75
Buffalo, steel	15.00 to 15.50
Chicago, iron	13.00 to 13.50
Chi., rolled steel	15.50 to 16.00
Cincinnati	11.50 to 12.00
Eastern Pa. cast	15.50 to 15.75
Eastern Pa. rolled	14.75 to 15.25
N. Y., iron, deal	11.50 to 12.00
Pittsburgh, iron	15.00 to 15.50
Pittsburgh, steel	16.00 to 16.50
St. Louis, iron	13.00 to 13.50
St. Louis steel	13.00 to 13.50

NO. 1 CAST SCRAP

Birmingham, cup.	13.00 to 13.50
Boston	14.00 to 14.50
Boston, textile	13.25 to 13.50
Buffalo	14.00 to 14.50
Chicago, mach.	15.95 to 16.50
Chicago, railroad	14.55 to 15.10
Chicago, agri.	14.00 to 14.55
Cincinnati, mach. cupolas, net deal	14.50 to 15.00
Cleveland, cupola	15.50 to 16.50
Detroit, net	12.25 to 12.75
Eastern Pa. cupola	15.50 to 16.00
N. Y., cup., deal	13.00 to 13.50
Pittsburgh, cupola	14.00 to 14.50
San Fran., del	20.00 to 21.00
Seattle	14.50 to 15.00
St. Louis, railroad	13.00 to 13.50
St. Louis, agri	13.00 to 13.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo, breakable	11.50 to 12.00
Cleve., breakable	12.25 to 12.50
Detroit, auto., net	17.00 to 18.00
Detroit mach., net	12.75 to 13.25
Eastern Pa.	14.50 to 15.00
New York, deal	11.50 to 12.00
Pittsburgh	11.75 to 12.25

MALLEABLE

Boston, railroad	13.50 to 14.50
Buffalo	14.50
Chicago, agri.	12.00 to 12.50
Chicago, railroad	12.75 to 13.25
Cinn., R. R., deal	11.50 to 12.00
Cinn., agri., deal	10.50 to 11.00
Cleveland, agri.	15.00 to 15.50
Cleveland, rail.	15.00 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, rail	14.00 to 14.25
St. Louis, agri	11.50 to 12.00
St. Louis, rail	11.50 to 12.00

Miscellaneous Scrap

RAILS FOR ROLLING
5 feet and over

Birmingham	11.50 to 12.00
Boston, dealers	9.50 to 10.00
Buffalo	13.50 to 14.00
Chicago	15.00 to 15.50
Eastern Pa.	14.50 to 15.00
New York	10.50 to 11.00
Pittsburgh district	16.00 to 16.50
St. Louis	13.00 to 13.50

LOCOMOTIVE TIRES

Chicago, No. 1	13.50 to 14.00
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	11.75 to 12.25

LOW PHOS. PUNCHINGS

Chicago	14.50 to 15.00
Pittsburgh	16.00 to 16.50

of about 50 cents per ton, which is attributable chiefly to higher prices at Harrisburg, Pa., for which point dealers are now paying $10, delivered.

Boston, Aug. 14.—There was a slightly firmer price for heavy melting steel in the scrap market during the past week, resulting from higher prices in the Pittsburgh district. Generally, prices ruled steady through the week. For heavy melting steel the price is $8.75 to $9.25, though the latter is paid only in rare instances and then mainly for export.

Pittsburgh, Aug. 14.—Further price advances have been made in the scrap market, recent purchases of heavy melting steel having been made at $15.50 and $16. The latter figure explains why such high figures were paid by dealers for steel on the recent Pennsylvania railroad list. They had a $16 order at one nearby point and since then have taken one or two others at the same basis for other delivery points. These followed the booking of a fairly large tonnage by an independent steel interest here at $15.50. This figure was paid by a large steel company for steel on the Baltimore & Ohio list, and thus with the two largest scrap allotments out of the way a real scarcity presents itself in the face of a large short interest. Other grades are up in harmony with this advance. One dealer is offering $12.50 for No. 1 wrought for his yard.

Buffalo, Aug. 14.—The scrap market is active over reports of sales and inquiries. Most activity concerned heavy melting steel, which had advanced $1 following purchases made by Buffalo consumers. One mill which uses a high-grade mixture is reported to have been able to purchase only a comparatively small tonnage at $14.50, while another is said to have made a purchase on the basis of $14.75.

Detroit, Aug. 14.—Turnings, borings and hydraulic compressed sheets show strength and have been advanced, but heavy melting steel is not affected and auto cast is distinctly weaker. Sentiment seems decidedly stronger. Offerings by automotive interests are declining moderately, but not sufficiently to affect prices. Turnings are now priced at $5.25 to $6, compressed sheets at $10.25 to $10.75 and cast borings at $7.50 to $7.75.

Cincinnati, Aug. 14.—Dealers in iron and steel scrap feel evidences of an advance and offers to buy are 25 to 50 cents above prevailing levels. In the face of a rising tendency dealers are not anxious to book tonnage. A number of advances have been made in various grades as a result.

St. Louis, Aug. 14.—While no specific upward revisions have been made the general price trend of iron and steel scrap is firmer. This is the first time in many weeks this can be said of the local market, and it is more due to sympathy with higher prices in Chicago, Pittsburgh and other points east than to buying here.

Birmingham, Ala., Aug. 14.—Iron and steel scrap is moving in small quantities, and prices are unchanged but low compared with a few months ago. Heavy melting steel sells at $10.25 to $10.74, delivered, in the immediate district.

Toronto, Ont., Aug. 14.—Following a dull market during the first few days of this month business in iron and steel scrap has returned to the steady pace of a month or six weeks ago. Orders are mostly for small tonnages, making a good total. At Toronto improvement is seen in machinery cast, stove plate and malleable. Hamilton, Ont., consumers are taking delivery of heavy melting steel and turnings on contract and placing new orders. Demand for old rails has become more pronounced and some big tonnages have been closed.

Philadelphia, Aug. 14.—Activity in other districts has not aided conditions here because most consumers now are covered several weeks. No upward tendency is reflected and on scattered sales cast wheels declined slightly and wrought declined 50 cents to $1.

Cleveland, Aug. 14.—Shipments of iron and steel scrap are being taken freely by consumers but no new buying is being done. Dealers are asking more for material as it is becoming less easily obtainable, but no sales have been made at advances.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$22.00
Steel axles	20.00
Car wheels	16.00
Stove plate	13.00
Wrought pipe	5.00
Turnings	5.00
Heavy melting steel	7.00

TORONTO

Steel axles	13.50 to 14.00
Iron axles	15.50 to 16.00
Heavy melting steel	8.00 to 8.50
Turnings	6.50 to 7.00
No. 1 mach. cast (net)	14.50 to 15.00
Malleable, (net)	12.50 to 13.00
Stove plate (net)	8.50 to 9.00

Exports of pig iron and ferroalloys from Germany in June totaled 20,628 metric tons. Imports were 31,422 metric tons.

Semifinished

Shipments Heavy, Mill Operations Scheduled Farther Ahead —Wire Rods and Skelp Strong

SPECIFICATIONS for sheet bars, billets and slabs are heavier, and delivery dates are being scheduled farther ahead. The leading independent mill interest at Cleveland has run for seven consecutive months at full capacity; this reflecting the generally favorable operating rates. Pittsburgh sellers report northern Ohio producers shading prices.

SEMIFINISHED STEEL PRICES, PAGE 402

Pittsburgh, Aug. 14.—Specifications for semifinished steel are increasingly heavy in most directions due to sustained demand for strip steel and various grades of sheets. New inquiries are scarce and nothing is being done for fourth quarter. Sellers in this locality have been losing tonnage to northern Ohio makers who have been willing to absorb freight and offer attractive prices. All here quote $33 on 4 x 4-inch rerolling billets for fourth quarter, and the same figure is available on slabs and sheet bars. Wire rods are strong at $42 with prospects of a higher figure for fourth quarter. Tonnage moving out is fairly heavy to cold bar finishers, nut, bolt and rivet makers and wire drawers. New inquiries for skelp are inactive. For the remainder of the quarter 1.90c is asked with some material being shipped against 1.85c contracts. A 2.00c price is expected for fourth quarter although books have not yet been opened. Forging billets are in better demand and $38 is the price generally quoted.

Cleveland, Aug. 14.—Demand for sheet bars, billets and slabs is gaining. The leading merchant producer here continues operating 13 of its 14 open hearths, and is scheduled farther ahead than recently. It has been operating its semifinished steel department 100 per cent since Feb. 1, one of the longest continuous stretches at this rate in several years. Prices are unchanged.

Chicago, Aug. 14.—Some price resistance has developed for rerolling billets. It is understood $32, base, Chicago, has been quoted for 4 x 4-inch billets, but the more general range is $32 to $33. Forging billets are around $38, Chicago. Sheet bars continue $34.50 to $35.

Youngstown, O., Aug. 14.—Republic Iron & Steel Co. has just announced it has opened its books on sheet bars for last quarter delivery at $33. This is a repetition of the present quotation.

Philadelphia, Aug. 14.—Billet prices are firmer at $33, Pittsburgh, now the usual price for rerollers. Forging billets continue $38, Pittsburgh. Moderate tonnages have been sold at these prices in the past week.

As early as 1585 iron ore was discovered in a number of places in North Carolina by an expedition sent out by Sir Walter Raleigh.

Bars

Buying and Specifications Are Increasing Mill Bookings and Deliveries Are Being Deferred

CONSUMERS of soft steel bars are buying and specifying at a rate that is bringing more tonnage to mills than they can turn out at present rate. Some deliveries are becoming deferred and buyers must anticipate further. Prices are holding well and the tendency is upward. No quotations under 1.90c, Pittsburgh, are now out to average users.

BAR PRICES, PAGE 401

Chicago, Aug. 14.—Despite smaller forward sales of bars and other finished products from the rate of a week ago, specifications are holding well up to previous marks and in most cases represent sales that are quickly turned into specific orders. Specifications the first ten days in August were more than double those of early July, while sales exceeded those in the first ten days of July by a comfortable margin, one producer reports. Automotive and farm equipment buying are the mainstays of bar demand. Producers as well as warehouses report a wider use of bars in many metal-working lines, particularly the building trades.

Attractive tonnages of soft steel bars are reported on the basis of 1.95c, Chicago, in a few cases, but differentials apply chiefly to tonnage users who have their specifications well in hand. Also, even higher than 2.00c is obtained, owing to the quantity differentials applying on small-lot sales.

Rail steel bars are 1.85c to 1.90c, Chicago Heights. The 1.90c price obtains for mixed carload and odd-lot orders. Shipments still continue high on rail steel bars for building work which were ordered earlier in the season. Operations are at full turn.

New York, Aug. 14.—Demand for steel bars is brisk and specifications show an increase as compared with the corresponding portion of July, while July showed a substantial increase over June. The current market here continues 1.85c to 1.90c, base, Pittsburgh, equivalent to 2.19c to 2.24c, delivered New York.

Buffalo, Aug. 14.—Specifications and new business are satisfactory. The price is firm at 1.95c to 2.00c, Buffalo.

Pittsburgh, Aug. 14.—Deliveries of merchant steel bars are fast becoming more deferred. Some independent makers can work small orders into rolling schedules and deliver within a week or ten days. On some sizes Carnegie Steel Co. requires three to five weeks. Cold bar finishers are actively specifying and this business is related to the sustained automobile demand. Springmakers are taking large tonnage for automobile springs, although railroad car spring demand is negligible. No quotations are out for this quarter below 1.90c although deliveries are being made against 1.85c contracts. Makers plan to ask 2.00c for fourth quarter. All state that specifications for material at less than 2.00c must be in their hands in time for shipment before Sept. 30.

Philadelphia, Aug. 14.—Steel bar makers are notifying customers that Sept. 10 will be the final date for specifying third quarter tonnage. Current demand is at the rate of the past few weeks. The usual price is 1.90c, Pittsburgh, but 1.85c, Pittsburgh, is obtainable.

Youngstown, O., Aug. 14.—Naming 2.00c, Pittsburgh, as its quotation on steel bars for fourth quarter delivery, Republic Iron & Steel Co. has just outlined its sales policy for the next period. The fourth quarter quotation will be an advance of $2 a ton over the present maximum of 1.90c. Specifications for October delivery are expected to be in the hands of the mills by Sept. 10, as formerly. District bar mills are operating fully as well as in the preceding week, with consumers covering steadily on a broad basis. Carnegie Steel Co. here is operating at 75 per cent and independents at 55 to 60.

Cleveland, Aug. 14.—Despite a moderate decline in demand from the automotive interest at Toledo, sales of soft steel bars in this territory as a whole are ahead of the comparable period of July. Little of this business is in anticipation of higher prices and reflects chiefly the seasonally high rate of consumption. Bars are 1.85c, Cleveland or Pittsburgh mill, for delivery this quarter, with 1.90c applying on small lots and 2.00c announced for fourth quarter.

Detroit, Aug. 14.—Bar mill products are moving unusually well for mid-August and shipments into this district will come close to equalling those of July provided the usual month-end bulge develops. Ford requirements are heavy, while Buick is again at capacity, Chevrolet not far from its peak and Chrysler, Hudson-Essex and Dodge little changed from the activity of late July. For most automotive users 1.85c, Pittsburgh, is quoted, with an increasing proportion of small business priced at 1.90c.

Plates

Tank and Barge Work Fairly Active—Miscellaneous Requirements Moderate—Prices Steady

OIL tank and barge requirements feature the plate market, with demand from general manufacturing lines relatively light. Tanks ordered by the Humble Oil Co. for erection in Texas will take about 7500 tons of plates; additional inquiries for tank plates pending at Chicago total 10,000 tons. Oil interests are placing orders for many small tanks in eastern territory.

PLATE PRICES, PAGE 401

New York, Aug. 14.—The Humble Oil Co. has purchased fourteen 90,000-gallon tanks from Petroleum Iron Works for erection in Texas, requiring about 7500 tons of plates. Beacon Oil Co. is in the market for 450 tons of tank work for erection in Brooklyn. Asiatic Petroleum Co. has bought a site at Baltimore and is expected to acquire a site in Tampa, and it is likely that the company will inquire for tanks for both locations. Tidewater Oil Co. also is expected to buy tanks soon for a newly-acquired site at Baltimore. Oil interests are placing orders for storage tanks with capacity of 4000 to 5000 barrels each and while the individual tonnages involved in the orders are small, the aggregate is large. Standard Oil Co. of New Jersey has not yet taken action on its inquiry for oil tanks for Sumatra. About 100 tons of plates will be required for a tank for the Valhalla water project at Mt. Pleasant, N. Y., the general contract for which has been awarded to Michael Marinella, Rye, N. Y. More than 2000 tons of plates is involved in 55 locomotives for which the New York Central railroad is inquiring. Melrose Contracting Co. is low on a pipe line in the Bronx for the New York department of water, requiring about 500 tons of plates. Eastern mills continue to operate at 65 to 75 per cent.

Pittsburgh, Aug. 14.—Plate fabricators are much interested in the barge letting scheduled for Friday for the Mississippi river commission, involving approximately 11,000 tons of plates. Union Barge Line, Pittsburgh, has divided an order for 18 barges evenly between the Dravo Contracting Co. and the American Bridge Co., requiring a total of 3000 tons of plates. Several tentative barge prop-

ositions are up but final development will come later. Plate mills are operating well for this season. While some deliveries are being made against 1.85c contracts, 1.90c now is minimum and the specifications have to be in hand so that the material can be shipped by Sept. 30.

Cleveland, Aug. 14.—Plate producers are increasingly firm in their stand on 1.90c, Pittsburgh, for material shipped the remainder of this quarter, with 2.00c announced by many makers for fourth quarter. Plate orders are only moderate, but compare favorably with July and last August.

Chicago, Aug. 14.—From 10,000 to 12,000 tons of oil tank plates is on inquiry, and one Chicago district mill closed on about 1000 tons of tankage. News from the oil country is fairly encouraging. Some tank building programs are being planned to follow pending pipe line construction. Magnolia Petroleum Co., Galveston, Tex., has purchased an additional 640 acres, giving the company a total of 1280 acres for its Midland, Tex., tank farm. Plate mill operations are slightly under 70 per cent. Oil tankage fabricators are chief beneficiaries now of the differential under 2.00c, Chicago, to preferred industries.

Philadelphia, Aug. 14.—Plata demand is somewhat less than the July rate, but eastern mills continue operating at 60 to 75 per cent, except one which is around 25 per cent. The usual price is 2.00c to 2.05c, base, Coatesville, although a good deal of the current business is placed on old protections at lower figures.

CONTRACTS PLACED

1500 tons, nine towing barges, 175 x 26 x 11 feet, for Union Barge Line, Pittsburgh, to Dravo Contracting Co.
1500 tons, nine barges for Union Barge Line, Pittsburgh, to American Bridge Co.
250 tons, water tower tank for Wauwatosa, Wis., to Pittsburgh-Des Moines Steel Co.

CONTRACTS PENDING

11,000 tons, 86 to 98 barges, Mississippi River commission, for delivery to three points; bids close Aug. 17.
Unstated tonnage, 2,000,000-gallon steel reservoir, with foundations, water works, Purcellville, Va.; bids in Aug. 15.

Rumors Tie Republic and Steel & Tubes

Cleveland, Aug. 14.—Closer relationship between Republic Iron & Steel Co., Youngstown, O., and Steel & Tubes Inc., with plants at Cleveland, Elyria, O., and Brooklyn, N. Y., is being considered, according to reports current here today. Directors of Steel & Tubes, now building a new plant in Detroit, were meeting today.

The trade in tin plates had already existed for many years in Bohemia, exclusively, and in 1620 it was introduced into Saxony.

Pipe

Line Pipe Negotiations Clouded but Mills Operate 70 Per Cent —Cast Pipe Better

MERCHANT pipe demand is sufficient to maintain 70 per cent operations of tubular mills, aided by the backlogs of line pipe. Negotiations for line pipe are clouded, some lines reported closed being subject to controversy. No large lines were awarded during the week. Cast pipe buying for municipal purposes is better, with Kingston, N. Y., taking 4335 tons in the week.

PIPE PRICES, PAGE 402

Pittsburgh, Aug. 14.—Standard full weight merchant pipe jobbers are enjoying a slightly better selling rate, judging by repeat orders coming to pipe mills, now operating 70 per cent or higher. Some oil country goods is being ordered for the Bradford, Pa., and other nearby oil districts where more drilling is in progress.

The 103,000-ton electric welded gas line award claimed by a Milwaukee maker is denied by the Texas Co., but the trade believes it will go in that direction since this interest alone can furnish eight miles per day, the mileage required by the purchaser. This represents 450 miles of 24-inch pipe. Texas Co. will close shortly on 25,000 tons for a 4 to 12-inch oil line for installation in western Texas, running to Port Arthur. Nothing definite is heard here about the 250 or 350-mile line from Wyoming to Salt Lake City, and definite confirmation is lacking that the National Tube Co. received the 425 miles of 22-inch for a line from Amarillo, Tex., to Kansas City, understood placed with it by the Standard Oil Co. of New Jersey.

Houston, Tex. interests are co-operating with Moody-Seagraves Corp. in plans for 218 miles of 16-inch gas line involving approximately 37,500 tons of steel pipe. The line is to run from Winkler county, Texas, to Lea county, New Mexico.

New York, Aug. 14.—Cast pipe demand is featured by the award of 4335 tons of 24-inch pipe for Kingston, N. Y. Other sizable tonnage is likely to be closed shortly as general contracts have been awarded for furnishing and laying 10 miles of 6 to 16-inch pipe for Mt. Pleasant, N. Y., and approximately 1000 tons, mostly 12-inch pipe, for the local department of water supply. Prices are unchanged, although slightly stronger.

Cleveland, Aug. 14.—Recent large line pipe orders booked by tubular products makers have placed mills in such favorable operating positions that efforts to book merchant pipe have slackened a trifle. Some good pipe business for construction purposes is in sight in this district with the general run of building demand holding at an unchanged rate.

Chicago, Aug. 14.—A definite pick-up has developed in the buying of cast iron water pipe through contractors. This business is more active particularly in the Chicago and Detroit districts. Small-lot buying in both territories is active. Chicago water works department is inquiring for 1920 tons of 8 to 12-inch pipe. Highland Park, Ill., is in the market for 400 tons of 6 to 10-inch pipe.

Birmingham, Ala., Aug. 14.—Lettings for cast iron pressure pipe were less active in the past week but despite heavy production and shipments the unfilled tonnage has not been cut down materially.

CONTRACTS PLACED

4335 tons, 24-inch class B pipe, Kingston, N. Y., to Warren Foundry & Pipe Co.
1100 tons, 6, 8 and 12-inch centrifugal for Weyerhaeuser Timber Co. plant, Longview, Wash., to American Cast Iron Pipe Co.
416 tons, 4 to 12-inch class B, Tracy, Calif.; general contract to W. J. Tobin, Oakland, pipe to unstated maker.

CONTRACTS PENDING

4500 tons, 60-inch, class A, Atlantic City, N. J.; bids in Aug. 16.
3152 tons, including 2198 tons of 6 to 16-inch class B and 954 tons of 6 to 16-inch class C pipe for Fairlawn, N. J.; contractors' bids opened. Alternate bids asked on centrifugal, handspun and other processes.
1920 tons, 8 and 12-inch pipe for Chicago; bids Aug. 20.
1000 to 1100 tons, class B cast pipe, mostly 12-inch, for department of water supply, gas and electricity, New York, for installation in Brooklyn; Nicholas De Stefano Contracting Co. awarded general contract.
700 tons, 12 to 30-inch pipe for Springfield, Ill.
567 tons, 8 and 12-inch class D pipe, Hartford, Conn.; bids in.
400 tons, 6, 8 and 10-inch pipe for Highland Park, Ill.: bids in.
318 tons, 2-inch class B, Los Angeles; bids in.
150 tons, 6-inch pipe, Newton, Mass.
148 tons, 2 and 4-inch class B, Compton, Calif.; bids opened.
147 tons, 6 to 10-inch class C, improvement to Garnet street, San Diego, Calif.; bids Aug. 27.
Unstated tonnage, 10 miles of 6 to 16-inch pipe for Mt. Pleasant, N. Y.; Marinelli Contracting Co., Rye, N. Y., awarded general contract.
Unstated tonnage, 34,587 feet, 6-inch cast pipe, 7841 feet, 4-inch pipe and 6730 feet 2-inch galvanized iron mains, Purcellville, Va.; bids in Aug. 15.

Pittsburgh Steel Rate Up to 78 Per Cent

Pittsburgh, Aug. 14.—Steelmaking here is up a few points, possibly 78 per cent being a fair average. Two independents have 9 out of 12 open

hearths on and a few smaller ones are on a 50 per cent basis. Bethlehem Steel Corp. as a whole is on approximately an 80 per cent basis, although at Steelton, Pa., with addition of three open hearths, it is operating full, sustained rail operations making that possible. Carnegie Steel Co., Jones & Laughlin Steel Corp. and others here are on a 75 to 80 per cent basis.

Adrian Furnace Co. stack, scheduled to go into blast Aug. 1, could not arrange for its coke supply with its constituent coal interest but it expects to get going this week. Youngstown Sheet & Tube Co. starts Grace furnace at its Brier Hill works this week, but later will suspend operations at its Jeannette stack of the same group for repairs.

Tin Plate

Heavy Specifications Issued by Can-Makers—Business Increases

TIN PLATE PRICES, PAGE 401

Pittsburgh, Aug. 14.—Most specifications are in hand for tin plate to be shipped to canmakers this quarter. This tonnage, with extra lots that will be required, insure full operations for the active tin mills at least through September. Some extra tonnage already has developed because of the heavy salmon pack. Fruit and vegetable packs are expected to be abnormally large. Some canmakers, including Continental Can Co., Canonsburg, Pa., report a 25 per cent increase in business during the first half of the year compared with the first half of 1927. Standard Tin Plate Co., Canonsburg, as well as other independents in this section are operating full. American Sheet & Tin Plate Co. is on approximately a 95 per cent basis mechanically, although with other makers it experienced further recession in output last week due to the extreme heat. Tin plate is still $5.25.

New York, Aug. 14.—The military professional bureau of the Japanese army is taking bids on 20,000 base boxes of tin plate.

Cold Finished Steel

August Tonnage Equals Large Record of July

COLD FINISHED PRICES, PAGE 401

Pittsburgh, Aug. 14.—After unexpected buying of cold finished bars in July, August tonnage is being maintained at a surprisingly high rate. Several makers had the best July in 10 years, due to the purchase of large automotive tonnage. While distribution is better than at any time in two years, consumers are confining themselves to closer dates than usual and hence all material is wanted on rush shipment. From 70 to 75 per cent is the general average of operations. Cold finished bars are 2.10c.

Sheets

Prices Advanced $2 a Ton by Independent Mills for Fourth Quarter—Current Demand Strong

AN ADVANCE of $2 a ton for all grades of steel sheets except full-finished has been announced by leading independent mills for delivery in fourth quarter, but action has not been taken as yet by the Steel corporation's mills. The new prices are expected to receive their first test shortly. Meanwhile, current demand continues of large proportions for most consuming industries.

SHEET PRICES, PAGE 401

Pittsburgh, Aug. 14.—While some independent sheetmakers are endeavoring to establish advances of $2 a ton on all but autobody sheets for fourth quarter, the American Sheet & Tin Plate Co. defers action. An effort is being made to establish 2.75c as minimum on black sheets; 3.50c on galvanized in large quantities or 3.60c for small amounts; 2.00c for blue annealed (2.10c when 45-inch or wider material is required); and 4.00c for full finished. Makers claim they should have more money for full-finished, but cannot consistently advance that figure until black sheets reach 2.90c. Sheet demand is as diversified as ever. Attractive orders were received here last week from automobile manufacturers, and additional orders were lost because satisfactory delivery dates could not be assured. Some orders for normalized steel had to be refused because such furnaces have at least 22 days' work ahead of them and the material was wanted in less than three weeks.

New York, Aug. 14.—Demand for sheets is at least as good so far in August as in the corresponding portion of July. Some mills report business so far has been better in August than in July. Prices are stable. On galvanized the usual price is 3.40c, base, Pittsburgh. Blue annealed are 2.00c to 2.10c, and on black 2.65c.

Buffalo, Aug. 14.—Black sheets seem stabilized at 2.65c, base, Pittsburgh. Automobile body sheets are firm at 4.00c and galvanized at 3.50c to 3.55c. Operations are 88 per cent.

Philadelphia, Aug. 14.—Sheet demand is fairly good, although the current rate of bookings is below that of recent weeks. Eastern mills are operating about 70 per cent. The usual minimum price of black sheets is 2.55c, base, Pittsburgh. Galvanized sheets are 3.40c to 3.50c, while blue annealed continue 2.00c to 2.10c.

Youngstown, O., Aug. 14.—An advance of $2 a ton on sheets for fourth quarter has been announced by Youngstown Sheet & Tube Co. and Republic Iron & Steel Co. The advance will affect all grades of sheets manufactured in this district except No. 20 gage autobody which will remain unchanged. The new fourth quarter schedule of prices follows:

One-pass black, 2.75c base for 24 gage; galvanized, 3.60c for 24 gage; blue annealed, under 45-inch wide 2.00c for 10 gage, and 45-inch or wider 2.10c; autobody, 4.00c base for No. 20 gage. Sheet mills in this district have continued to book a steady influx of new business. Users of autobody sheets are insistent for prompt deliveries. Independent sheetmakers are running at 84 per cent, against 85 per cent last week.

Cleveland, Aug. 14.—No decrease in the rate of specifications being received by sheet mills is noted. Operations continue at capacity for a number of units selling into this territory. Deliveries on full finished and special sheets continue deferred into the last half of September.

For delivery after Sept. 30, sheets are being quoted 2.75c, Pittsburgh, for black, 2.00c for blue annealed with 2.10c for over 45 inches width, 3.50c for galvanized and 4.00c for autobody. These levels represent increases of $2 to $3 a ton for black and $2 to $4 for galvanized. Several cars of galvanized were sold during the week at 3.50c, Pittsburgh, but for spot delivery 3.45c, valley, still is obtainable.

Detroit, Aug. 14.—For most sheet sellers specifications thus far in August compare favorably with those of the comparable period of July, but it is to the last half of the month that sellers look for brisk business. Increased demands are emanating from Ford and parts and body makers doing Ford business. Makers are assured good business at least through the early runs of new models. Black sheets are 2.60c, Pittsburgh, with an effort to stabilize at 2.65c. Galvanized is 3.50c to moderate-size buyers and 3.40c to large ones. Blue annealed business frequently goes to strip mills at a 1.80c equivalent. Full finished sheets seem firm at 4.00c. Furniture sheets are 3.80c and 3.60c, depending on the grade. Sheetmakers are doing missionary work for higher prices next quarter.

Chicago, Aug. 14.—Announcement is made by Inland Steel Co. that fourth quarter prices of black and galvanized are advanced $2 a ton. Blue annealed remains unchanged at 2.10c. The new mill prices are 2.85c for No. 24 black and 3.70c for No. 24 galvanized. Chicago delivered prices are $1 a ton higher than mill quotations. Demand for black and galvanized is showing a steady gain.

St. Louis, Aug. 14.—Demand for sheets holds up in fair shape, and new orders and specifications are in about the same volume as July.

Structural Shapes

New York Heavy Letting Features Market—Inquiries Indicate Active Fall—Material Prices Firm with Fabricated Levels Stronger

PROVISIONAL awarding of 17,000 tons for the Abraham & Strauss department store in Brooklyn, N. Y., featured the structural market of the week. Of this total only 6200 tons is for early fabrication. Heavy awards in the metropolitan district of New York are expected during the next few weeks. The Reynolds building, 17,000 tons, is about to be awarded, and 48,000 tons of subway work continues pending. A 4000-ton section was placed but a 3060-ton lot was added to inquiry.

Plain structural prices are firm at 1.90c, Pittsburgh, and 2.00c, Chicago, for new business, with mills showing a united stand on limiting specifications to Sept. 10, after which the $2 a ton increase is applicable.

STRUCTURAL SHAPE PRICES, PAGE 401

New York, Aug. 14.—More than 17,000 tons for the Abraham & Strauss department store, Brooklyn, has been provisionally awarded, and a heavy additional structural tonnage is on the point of being placed, including 17,000 tons for the Reynolds building. Following the issuance of heavy subway inquiries noted last week 3060 tons has been brought out and at least 4000 tons for another section has been placed. In addition, early action is expected on one lot of 9400 tons.

In accordance with all expectations, structural buying in the New York metropolitan district in July was the best so far this year, involving 70,000 tons, according to the Structural Steel Board. This is exclusive of bridges, piers and subway work, and is the largest since July a year ago, when 74,000 tons was placed, and compares with 112,000 tons in October, 1925, the highest monthly total for this district.

Although virtually unchanged, an upward price tendency still is noted in both plain shapes and fabricated material.

Boston, Aug. 14.—Not much contracting in structural lines is going on. During the past week 1600 tons for the new building for the New England Telephone & Telegraph Co. was awarded to New England Structural Co.

Philadelphia, Aug. 14.—Structural shape business continues good with eastern mills operating 65 to 75 per cent. The usual price is 2.01c, delivered Philadelphia, and one leading maker is refusing to shade this price on any business. Other mills, however, continue to book considerable current requirements at the old prices.

Buffalo, Aug. 14.—Structural mill operation is better and business has improved. The price is firm at 1.95c to 2.00c, Buffalo, for plain material with good prospects for last quarter business.

Pittsburgh, Aug. 14.—Vacation season apparently is deterring structural shape awards in this district but the inquiry rate keeps up well. Awards of the week were small. While material is going out on 1.85c contracts, the mills claim they will not take any more business at less than 1.90c for delivery this quarter and it has to be specified so that fabrication and delivery can take place prior to Sept. 30, when the 2.00c price for fourth quarter takes effect.

Cleveland, Aug. 14.—With the exception of contracts placed with an unidentified Ohio fabricator the structural market was dull last week. This interest booked 4200 tons for Texas & Pacific railroad bridges. Plain material prices are 1.85c to 1.90c, Pittsburgh, depending upon whether the buyer is covered on contract.

Chicago, Aug. 14.—An unusually heavy volume of building work for this season of the year is being figured by architects and engineers. One architect is working on five building projects which average 3000 tons of structural steel each. Close to 15,000 tons has appeared in fresh inquiry. The largest structural fabricating shops in the Chicago district are busy and it has been necessary for them to apportion work to other fabricators. The basis of forward buying for the remainder of the third quarter is 2.00c, Chicago.

Birmingham, Ala., Aug. 14.—All steel fabricating shops of this district have sufficient business to warrant steady operation. Ingalls Iron Works, Virginia Bridge & Iron Co., Reeves Bros., Southern Steel Co., Birmingham Tank Co. and others of the larger fabricators of structural and plate steel report contracts in hand and other business in sight which is most encouraging.

Awards Compared

	Tons
Awards this week	49.794
Awards last week	22,500
Awards two weeks ago	44,730
Awards this week in 1927	33,870
Average weekly awards, July	43,008
Average weekly awards, 1928	39,729
Total awards to date, 1927	1,181,630
Total awards to date, 1928	1,271,426

CONTRACTS PLACED

17,000 tons, Abraham & Strauss department store building, Brooklyn, N. Y., provisionally awarded American Bridge Co.: first unit will require approximately 6200 tons.

9400 tons, subway section 2, route 108, Brooklyn, N. Y., award reported to American Bridge Co. through Rosenthal Engineering & Contracting Co., pending definite approval of general contract by board of estimate.

4200 tons, bridges for Texas & Pacific railroad, to unstated Ohio fabricator.

4000 tons, subway section 1-A, route 108, New York, awarded to Bethlehem Steel Co., through E. C. Serber, general contractor.

1800 tons, export work for South America, to Belmont Iron Works, through W. M. Kellogg Co.

1600 tons, New England Telephone & Telegraph Co. building, Worcester, Mass., to New England Structural Co.

1500 tons, industrial rayon plant, Covington, Va., to Virginia Bridge & Iron Co.

955 tons, building for Century Electric Co., St. Louis, to Mississippi Valley Structural Steel Co.

835 tons, first unit of Strawbridge & Clothier store building, Philadelphia, through Turner Construction Co. to Bethlehem Steel Co. Entire proposition will take 10,000 to 12,000 tons as noted last week.

800 tons, Pennsylvania railroad bridge, Marshall, Ill., to American Bridge Co

700 tons, column cores, Lehigh Valley warehouse, West 144th street, New York, awarded to Levering & Garrigues Co., through Barney Ahlers Construction Co.

700 tons, second unit, state office building, Trenton, N. J., to American Bridge Co.

700 tons, highway bridges at Marseilles and Brandon, Ill., fabrication to Mt. Vernon Bridge Co.

700 tons, 300-foot through truss span for Milwaukee, to American Bridge Co.

650 tons, high school, Great Falls, Mont., to Minneapolis Steel & Machinery Co.

500 tons, Goldberg building, Chicago, to McClintic-Marshall Co.

500 tons, J. T. Shapiro apartment house, 144 Dithridge street, Pittsburgh, to Levinson Steel Co.

500 tons, Western Maryland railroad warehouse, Baltimore, to Dietrich Bros.

455 tons, bridge at Saugus, Calif., to Claude Fisher, Los Angeles, steel to unstated fabricator.

425 tons, Erie railroad bridge, Youngstown, O., to Jones & Laughlin Steel Corp.

400 tons, store and office building, Quincy, Mass., to Palmer Steel Co.

385 tons, state bridge, Adams Station, N. J., to Phoenix Bridge Co.

350 tons, grade school No. 693, Chicago, to Vanderkloot Steel Works, previously noted as 830 tons.

350 tons, grade school No. 696, Chicago, to Vierling Steel Works, previously noted as going to another fabricator.

350 tons, chemical plant, Tacoma, Wash., to Star Iron & Steel Co.

225 tons, East State street bridge, Olean, N. Y., to McClintic-Marshall Co.

203 tons, bridge for Wallace Falls Timber Co. Index, Wash., to Wallace Bridge & Structural Steel Co.

200 tons, two bridges in Ohio for Pennsylvania railroad, to American Bridge Co.

170 tons, bridges for state highway department, Michigan, to Massillon Bridge & Structural Co.

166 tons, telephone building, Palo Alto, Calif., to Judson-Pacific Co.

150 tons, Levering street bridge, Philadelphia, to Bethlehem Steel Co.

150 tons, Brookline school, Pittsburgh, to McClintic-Marshall Co.

149 tons, sheet piling for Mare Island, Calif., navy yard, to unknown interest.

140 tons, bridge at Sargent, Calif., to Mc-

Clintic-Marshall Co.
130 tons, state highway bridge at Vermillion, O., to Fort Pitt Bridge Works.
125 tons, including Pennsylvania apartment building, Centre avenue, Pittsburgh, through Taylor-Meyer Co., general contractor, to W. N. Kratzer Co.
125 tons, state highway bridge, Rahway, N. J., to American Bridge Co.
125 tons, Pennsylvania railroad bridge, Hinsdale, N. Y., to Bethlehem Steel Co.
120 tons, warehouse for Pennsylvania railroad, Sixteenth street, Pittsburgh, to Pittsburgh-Des Moines Steel Co.
110 tons, state highway bridge, Catskill, N. Y., to American Bridge Co.
100 tons, church, Greencastle, Ind., through Leslie Colvin, to Insley Mfg. Co.
100 tons, small building for Superior Steel Corp., Carnegie, Pa., to Fort Pitt Bridge Works.
100 tons, highway bridge for Maryland state roads commission, Bethesda, Md., to American Bridge Co.
100 tons, Grimshaw garage, Seattle, to Isaacson Iron Works.

CONTRACTS PENDING

19,200 tons, subway route 107, section 5, Brooklyn, N. Y.; noted last week as pending, date of opening changed from Aug. 24 to Aug. 31.
4000 to 5000 tons, Lakeside hospital buildings, Cleveland; bids postponed until Aug. 20.
3060 tons, section 5-B, route 109, Brooklyn, N. Y.; bids opened Aug. 28.
2500 tons, extension to Wacker drive, Chicago.
2500 tons, mill building for United States Gypsum Co., Indiana Harbor, Ind.; steel bids asked.
2000 tons, Thompson building, Chicago.
2000 tons, Ruboff garage, Chicago.
2000 tons, public utility building, Milwaukee.
1100 tons, apartment, Thirty-eighth street and Second avenue, Verona, N. J.
800 tons, chamber of commerce building, Jamaica, Long Island, N. Y.
450 tons, Keith junior high school, Altoona, Pa.; general contract awarded John C. Snyder, Selinsgrove, Pa.
450 tons, Erie railroad bridge, Youngstown, O.; plans changed, bidders given chance to revise bids by telephone.
350 tons, California-Haddon Hall garage, Atlantic City, N. J., in addition to material noted for this hotel recently.
250 tons, hangar No. 4, Port commission, Oakland, Calif.; bids in.
200 tons, warehouse, Redburn, N. J.
200 tons, bridge, River street, Boston.
200 tons, warehouse for eGneral Electric Co. at West Pershing road and South Ashland avenue, Chicago; American Bridge Co. low bidder.

Unfilled Tonnage Lower

Unfilled bookings of the United States Steel Corp., as of July 31, were 3,570,927 tons, a decline of 66,082 tons. This reduction is equivalent to 1.81 per cent but leaves the total substantially higher than a year ago, when unfilled bookings at the end of July were 3,142,014 tons. Further comparisons follow:

Date	Total	Change, tonnage	Change, per cent	
July 31, 1928	3,570,927	66,082—	1.81	+
June 30, 1928	3,637,009	220,187+	6.45	+
May 31, 1928	3,416,822	455,311—	11.7	—
Apr. 30, 1928	3,872,133	463,073—	10.7	—
Mar. 31, 1928	4,335,206	62,983—	1.43	—
Feb. 29, 1928	4,398,189	122,242+	2.8	+
Jan. 31, 1928	4,275,947	303,073+	7.62	+
Dec. 31, 1927	3,972,874	518,430+	15.	+
Nov. 30, 1927	3,454,444	113,404+	3.39	+
Oct. 31, 1927	3,341,040	192,921+	6.1	+
Sept. 30, 1927	3,148,113	47,924—	1.49	—
Aug. 31, 1927	3,196,037	54,023+	1.7	+
July 31, 1927	3,142,014	88,768+	2.8	+
June 30, 1927	3,053,246	2,305+	0.075	+
May 31, 1927	3,050,941	405,191—	11.7	—
Apr. 30, 1927	3,456,132	97,008—	2.72	—
Mar. 31, 1927	3,553,140	43,979—	1.22	—
Feb. 28, 1927	3,597,119	203,058—	5.34	—
Jan. 31, 1927	3,800,177	160,792—	4.5	—
Dec. 31, 1926	3,960,969	153,522+	4.1	+
Nov. 30, 1926	3,807,447	123,786+	3.36	+
Oct. 31, 1926	3,683,661	90,152+	2.50	+
Sept. 30, 1926	3,593,509	51,174+	1.42	+
Aug. 31, 1926	3,542,335	60,187—	1.67	—
July 31, 1926	3,602,652	124,010+	3.56	+

Concrete Bars

Rail Steel Distributors at Chicago Having Record Year —Large Awards Still Few

SALES of reinforcing bars are unusually good for the season, although composed mostly of small lots. Inquiries continue numerous and an active month in August is expected. Rail steel distributors in the Chicago district are having a record year. From 6000 to 8000 tons is pending for the Apparel Mart, Chicago. Two New York schools will be built with foreign steel bars.

REINFORCING BAR PRICES, PAGE 401

Chicago, Aug. 14.—Rail steel reinforcing bar distributors report this year to date a record for sales in this district. Shipments thus far in 1928 are in excess of the entire 12 months last year.

From 6000 to 8000 tons of reinforcing bars will be required for the Apparel Mart, to be built over the Illinois Central tracks at Randolph street and Lake Michigan. The general contract has been awarded, but steel probably will not be bought for 60 to 90 days. Rail steel bars for building are 2.00c to 2.60c, while rail steel bars for road and bridge work are 1.85c to 1.95c.

Boston, Aug. 14.—The Providence terminal and Hood Milk tonnages of reinforcing steel have not yet been placed. They total 1000 tons.

Pittsburgh, Aug. 14.—While reinforcing concrete bars for a large number of buildings of various types are pending the present inquiry rate is less active than a few weeks ago.

While some contracts are still alive on the 1.85c basis, material sold for delivery through the remainder of this quarter carries the 1.90c minimum figure and has to be shipped by Sept. 30 to make room for the 2.00c price to be inaugurated Oct. 1 for fourth quarter.

Cleveland, Aug. 14.—New billet reinforcing bar prices have not strengthened in line with recent merchant bar increases, and 1.85c, Cleveland, continues available. Rail steel is nominal at 1.75c, mill.

Awards Compared

	Tons
Awards this week	6,123
Awards last week	5,381
Awards two weeks ago	9,070
Awards this week in 1927	8,295
Average weekly awards, July	5,103
Average weekly awards, 1928	7,236
Total awards to date, 1927	185,496
Total awards to date, 1928	231,563

CONTRACTS PLACED

600 tons, Marshall Field garden apartments, Chicago, to Truscon Steel Co.
589 tons, Big Dalton dam, Los Angeles, to Pacific Coast Steel Co.
500 tons, building for Miehle Printing Press & Mfg. Co., Chicago, to Joseph T. Ryerson & Son Inc.
459 tons, storm drain, Culver City, Calif., to Braun, Bryant & Austin, steel to unstated fabricator.
325 tons, Harmon sports arena, Chicago, to American System of Reinforcing.
300 tons, Palmolive-Peet building, Chicago, to Kalman Steel Co.
280 tons, building for B. A. Eckhart Milling Co., Chicago, to Barton Spider-Web System Inc., previously reported to unstated owner.
275 tons, hotel, Market and Eighth streets, St. Louis, to Laclede Steel Co.
250 tons, school, White Plains, N. Y., to Ferro Building Products Co.
250 tons, subway section 1-A, route 108, New York, to Igoe Bros., through D. C. Serber Inc.
200 tons, addition to plant of Victor Mfg. & Gasket Co., 5750 West Roosevelt road, Chicago, to American System of Reinforcing.
181 tons, bridge over Los Angeles river at Soto street for Vernon, Calif., to Pozzo Construction Co., steel to unstated interest.
175 tons, Reading railroad bridges, Wyomissing and Bridgeport, Pa., to Concrete Steel Co.
165 tons, Missouri Baptist sanitarium addition, St. Louis, to Laclede Steel Co.
160 tons, joists, McSorley garage, Pittsburgh, to Bethlehem Steel Co.
150 tons, road work in Illinois, to Olney J. Dean & Co.
147 tons, bridge at Saugus, Calif., to Claude Fisher of Los Angeles, steel to unstated interest.
143 tons, bars, McSorley garage, Pittsburgh, to Kalman Steel Co.
125 tons, two state highway bridges, Washington, to Northwest Steel Rolling Mills.
120 tons, vocational school, Queens, N. Y., and for Samuel J. Tilden high school, Brooklyn, N. Y., to Tidewater Steel Co., which will furnish foreign steel.
105 tons, joists, high school, Tyrone, Pa., to Kalman Steel Co.
104 tons, bridge over Niles canyon, Oakland, Calif., to Pacific Coast Steel Co.
100 tons, improvements to Boulevard of the Allies, Pittsburgh, to Electric Welding Co.
100 tons, state road work, West Virginia, to Concrete Steel Co.
100 tons, joists, H. Kamin apartment house, Pittsburgh, to Truscon Steel Co.
100 tons, joists, various jobs including Karnot, Pa., school, small building for American Cleaning & Repair Co., Pittsburgh, and Franklin township school, Newlinsburg, Pa., to the Jones & Laughlin Steel Corp.
100 tons, Bird Island pier, Buffalo, to unstated local maker.
100 tons, substructure for Marshall Field garden apartments, Chicago, to Barton Spider-Web System Inc.
100 tons, candy factory for Mars Inc., North Oak and Park avenue, Chicago, to Concrete Steel Co.
100 tons, building for Cameron Can Co., Chicago, to American System of Reinforcing.
Unstated tonnage, apartment hotel, Chicago, to Barton Spider-Web System Inc.

CONTRACTS PENDING

6000 to 8000 tons, Apparel Mart, Chicago; Starrett Co., general contractor.
1500 tons, Davis building, Broome and Hudson

streets, New York.
830 tons, causeway, Jones Beach, N. Y.
750 tons, Pennsylvania state road work including 100 tons for Schuylkill county, awarded Georges Construction Co., Uniontown, Pa.; and 125 tons for Greene county awarded J. F. Stambaugh, Ada, O., general contractor.
600 tons, work for Long Island railroad, Jamaica, N. Y.
500 tons, office building, Hollywood and Vine streets, Los Angeles; bids soon.
350 tons, boardwalk, Rockaway Beach, N. Y.; contract to Montrose Contracting Co.
300 tons, Methodist hospital building, Indianapolis, Ind.
275 tons, first unit of Strawbridge & Clothier store, Philadelphia; Turner Construction Co., general contractor.
160 tons, bridge over Deschutes river near Maupin, Oreg.; bids in.
110 tons, Sewickley Valley hospital, Sewickley, Pa.; general contract awarded Hutter Construction Co., Fond du Lac, Wis.
100 tons, high school, Erie, Pa.; Meyer & Johnston, architects; bids close Aug. 29.
100 tons, bar joists, hospital, Oil City, Pa.; B. E. Bailey, Oil City, architect; bids in.
100 tons, store building, Pittsburgh & Lake Erie railroad, Pittsburgh; bids close Aug. 20.

Refractories

Demand Shows Some Improvement—Operations Increase Slightly

REFRACTORIES PRICES, PAGE 402

Pittsburgh, Aug. 14.—Refractory demand is improving slightly with operations sustained among steel mills. Repairs and relinings mean orders for 50,000 to 150,000 brick and an occasional new blast furnace lining means approximately 500,000 brick. Two or three such orders were awarded recently and several more are in prospect. Brick makers are anticipating a good windup for the third quarter and are confident that the fourth quarter will be even more satisfactory. The majority of brickmakers are maintaining the quoted market level of $43 for first quality fire clay and silica brick. Chrome brick specifications are increasingly active and the last half promises to be even better than the first.

Bolts, Nuts, Rivets

Buying Steady at Fair Rate with Some Price Shading

NUT AND BOLT PRICES, PAGE 402

Pittsburgh, Aug. 14.—While occasional inquiries for single carloads of rivets, similar to that now current from the Southern Pacific railroad, come out, a few are of larger proportions, a case in point being that of a syndicate buyer wanting 21½ tons. The market on the whole, however, is quiet and some producers have sought to encourage bookings by cutting from 2.90c to 2.80c. Most makers, however, are maintaining 2.90c.

Chicago, Aug. 14.—Specifications for bolts, nuts and rivets are ahead of a month ago. Orders from farm implement works are growing steadily. Automotive activity continues. Prices are reported steady at 60 to 70 off for bolts and nuts, 3.00c, Chicago, for structural rivets in carload lots, and 70 to 70 and 10 off for small rivets.

Rails, Cars

Spotty Market Continues—Chicago Rail Mills at 55 Per Cent—July Equipment Awards Small

AWARDING of 3000 tons of rails enabled Chicago mills to step up to 55 per cent last week. Rail tonnage practically is out of the market and track fastenings being placed are in small lots. Equipment is featured by Great Northern Equipment Co. inquiry for total of 2500 freight and ore cars. July freight car orders of 582 were the smallest in two years.

RAILROAD TRACK PRICES, PAGE 402

New York, Aug. 14.—Car demand in this district is light, with little outstanding either in inquiries or orders. There appears to be sufficient inquiry pending throughout the country to inspire hopes of a more active month than July, when domestic freight car buying was the poorest so far this year. According to full returns, 582 freight cars were placed in that month, compared with 2422 in June, which was the next poorest showing thus far. Domestic freight car orders for the first seven months amount to 28,916, as compared with 44,460 for the corresponding period of last year. Further comparisons follow:

	1928	1927	1926	1925
Jan.	4,160	14,710	8,830	1,695
Feb.	10,220	5,960	12,895	5,510
March	2,958	4,955	8,895	4,730
April	6,043	3,675	4,615	5,060
May	2,531	5,425	4,448	6,985
June	2,422	7,440	4,285	1,835
July	582	2,295	1,265	800
Total (7 mos.)	28,916	44,460	46,233	26,615
Aug.	.....	1,181	152	2,875
Sept.	.....	682	3,335	7,905
Oct.	.....	886	2,840	11,145
Nov.	.....	1,189	3,925	11,685
Dec.	.....	14,897	8,990	16,885
Total	.....	64,042	60,575	77,110

Locomotive orders are small but slightly more numerous.

Pittsburgh, Aug. 14.—Light rail orders, one or two carloads at a time, come regularly to sellers here. These mostly are from the coal mining districts, in a few of which improved conditions are encountered. These sales of billet-rolled rails carry the $36 price. Rerollers continue to take what business they can at $34.

Track accessory orders come filtering through from the Pennsylvania and other railroads who are buying their tie plates and spikes as needed. Makers are well scheduled through this month and next at 70 per cent of capacity. At present no large formal inquiries are current but about the middle of September some are expected to come out for fourth quarter.

Chicago, Aug. 14.—Rail mills in the Chicago district booked 3000 tons of standard steel rails from a western road. To take care of a recent accumulation of tonnage mill operations were stepped up slightly this week to about 55 per cent, but unless fresh tonnage develops it is probable that they again may decline to about 50 per cent. It is understood inquiries for about 2000 to 3000 tons of rails are in prospect. Light rail business is a trifle better. Track fastenings purchased during the week amounted to about 2500 tons, all in miscellaneous lots. Operations of departments engaged in track fastenings output are a little higher than at the beginning of this month.

It is indicated that about 50,000 tons of steel will be required by the Great Northern railroad for equipment building. About 500 tons of steel will be required for the 33 suburban coaches to be built by the Chicago, Burlington & Quincy in its Aurora, Ill., shops.

CAR ORDERS PLACED

Missouri-Pacific, 100 automobile cars, to American Car & Foundry Co.
Southern Pacific, one passenger and baggage gasoline-electric rail motor car, to J. G. Brill Co.
St. Louis & Arkansas, one passenger and baggage gasoline rail car, to J. G. Brill Co.

LOCOMOTIVE ORDERS PLACED

Illinois Central, 600-horsepower, oil-electric locomotive, to General Electric Co. and Ingersoll-Rand Co.
Kwang Tung Yueh Han, Canton, China, two locomotives, to Baldwin Locomotive Works.
Mogyana Railway, Brazil, two locomotives, to American Locomotive Co.
National Railway of Mexico, two locomotives, to American Locomotive Co.

CAR ORDERS PENDING

Alaska railroad, two new or used passenger coaches.
American Railroad of Porto Rico, 100 cane cars.
Chicago, St. Paul, Minneapolis & Omaha, six gasoline-electric rail motor cars; these being in addition to four already on inquiry.
Erie railroad, five flat cars.
Great Northern Equipment Co., 500 coal cars and 1000 ore cars, latter reported contemplated in last week's issue; these are in addition to 500 box cars and 500 flat cars also noted as pending last week.
Norfolk & Portsmouth Belt Line, two caboose underframes.

Opens Steel Bids Aug. 20

Philadelphia, Aug. 14.—Pennsylvania railroad opens bids Aug. 20 on 25,000 tons of plates, shapes and bars, presumably for third quarter delivery.

The first lightning rods used in England were erected in 1762.

Wire

Manufacturers Taking Wire at Good Rate but Nails Show Some Hesitation

USERS of manufacturers' wire keep up their excellent rate of buying while nail demand continues to lag. Fall demand for fencing is forecast as excellent. Prices are holding generally at established levels and concessions are fewer than formerly. Production has not been changed and mills are keeping abreast of consumption of their products.

WIRE PRICES, PAGE 402

Chicago, Aug. 14.—Users of manufacturers' wire are taking material steadily. The outlook of jobbers is good in all rural territory, except in some sections of the South, where hesitancy still prevails. A good fall demand for wire fencing is expected. Some disappointment is expressed in jobber turnover, but stocks of nails are being reduced steadily. The outlook in the building trades, particularly in the Chicago district, gives promise of good activity in nails. Wire finishing departments are about 40 per cent engaged, and general operations of western mills are 60 to 65 per cent. Fewer concessions are reported. Mills are quoting 2.45c, Chicago or western mills, for bright plain wire, while nails are $2.60.

Pittsburgh, Aug. 14.—Manufacturers' wire specifications are described as good for this season, but nail specifications still leave much to be desired. No interference is experienced at present in connection with prices, 2.40c being firm as a base on plain wire, and $2.55 on wire nails. Some wire mills are down to 35 or 40 per cent and others are operating at not more than 50.

Cleveland, Aug. 14.—Some decrease in specifications for wire nails is noted. Jobbers have not been as active in the market recently. Manufacturers buying wire continue good specifications, the rate of consumption comparing favorably with that in July. Wire nails are being quoted $2.55, Cleveland, per 100-pound keg, with shading of $1 a ton in southern Ohio. Plain wire is firm at 2.40c.

Detroit, Aug. 14.—Wire products are none too strong even at the recently-reduced levels, but on tonnage business 2.40c, Cleveland, on wire and $2.55 on nails have not been tested. On some small nail requirements recently shading is reported. Most makers have low-priced commitments to work off. Specifications show a slight drop from the July rate.

Iron Ore

Pig Iron Activity May Stimulate Ore Demand Later—Market Quiet

IRON ORE PRICES, PAGE 402

Cleveland, Aug. 14.—While blast furnaces have adjusted themselves to market conditions and are in a much stronger position as demand for pig iron develops, more furnaces are not likely to be blown in unless prices increase substantially. It is this feature of the pig iron situation that interests Lake Superior iron ore producers. Activity in the iron market has not yet affected them, although several furnace interests are reported to be considering iron ore purchases later in the season. At present the market is quiet, with shipments going ahead steadily on contracts. The Lake Superior Iron Ore association reports the following summary of ore receipts and shipments from Lake Erie ports for the season to Aug. 1:

Port	Receipts	Shipments	Dock balance Aug. 1, 1928
Buffalo, No. Tonawanda, Port Colborne	1,664,189	5,884	4,677
Erie	262,245	271,021	61,621
Conneaut	3,724,427	3,669,645	1,556,895
Ashtabula	2,542,049	2,663,480	1,815,572
Fairport	818,836	852,348	299,856
Cleveland	3,467,882	2,353,454	1,087,439
Lorain	1,527,148	716,750	116,498
Huron	506,431	534,026	380,740
Toledo	611,770	343,508	61,709
Total	15,124,977	11,410,116	5,385,007
Comparative total 1 Yr. previous	17,848,739	13,809,271	5,459,497

Following are receipts at other than Lake Erie ports this season to Aug. 1:

Port	Receipts
Detroit	381,371
Indiana Harbor	996,233
Gary	1,867,449
South Chicago	2,997,268
East Jordan	9,699
Sault Ste. Marie, Ont.	304,586
Point Edward, Ont.	234,826
Total	6,791,432
Comparative total 1 Year previous	7,197,990

Strip

Strip Manufacturers Prepare to Stiffen Market — Automotive Needs Continue Heavy

HOT strip prices still exhibit a wide range but there is evidence that a movement is underway to strengthen the market. Most cold strip makers have now reduced their discount for cash in ten days to one-half of 1 per cent. Automotive requirements continue heavy, business from Ford and Ford parts makers being partially responsible.

STRIP PRICES, PAGE 402

Pittsburgh, Aug. 14.—Within a few weeks price inequalities in hot and cold strip steel will likely be ironed out by the growing tendency to advance quotations. The market on cold strips is quotable at 2.90c to 3.00c (one to three tons). Hot strips in wider widths can be had at 1.80c to 1.90c; 3 to 6-inch at 1.90c to 2.00c and narrow at 2.05c to 2.15c. Some shipments of the latter still are being made at 2.20c. Automotive demand holds up remarkably well. Other consuming lines are taking their usual quotas for this season. Additional cold strip makers, including the American Steel & Wire Co., have announced their intention of adopting the cash discount of one-half of 1 per cent. While some strip mills are on a 90 per cent average basis, others are down to 75.

Philadelphia, Aug. 14.—Demand for strip is not as good as the June and July average. Hot strip is at 2.10c, base, Pittsburgh, for less than 3-inch widths, 2.00c, for 3 to 6-inch and 1.90c for 6 inches and wider. These prices continue to be shaded on attractive business. The usual prices for cold strip continue at 2.75c to 2.90c, base, Pittsburgh.

Cleveland, Aug. 14.—Some fair specifications have been received in the past few days by hot strip sellers. Mills continue well booked on narrow widths with a week to ten days ahead on sizes up to 12-inch. Hot strip prices are unchanged at 1.90c, Pittsburgh, for 6 to 12-inch widths, applying on new business. Contract tonnage continues 1.75c. Cold strip has settled definitely to 2.65c, Cleveland, although several makers claim that 2.75c is minimum. Orders of 5 to 10 tons are obtaining the lower price, however.

Detroit, Aug. 14.—Practically all automotive users of strip are specifying liberally though a shade lighter than a month ago. Increasing Ford schedules are reflected in strip orders. While prices are scarcely higher, still they tend to go no lower. On some recent orders for hot strip under 3 inches 2.40c, Pittsburgh, governed. On 3 to 6 inch material 12.20c has been obtained. Business has been done below these levels. On wide hot strip the base is sometimes 1.80c. Cold rolled strip is 2.65c to 2.75c on 3 tons or more.

Nonferrous Metals

Prices on All Metals Are Holding Firmly—Copper and Lead Are in Better Demand—Producers Encouraged by Trade Outlook

Prices of the Week, Cents a Pound

	Copper			Straits Tin		Lead			Zinc	98-99%	Spot	Ingot
	Electro delivered	Lake delivered	Casting refinery	New York Spot	York Futures	New York	East St. Louis		St. Louis	Aluminum	Antimony	Nickel
Aug. 8	14.75	14.82½	14.37½	48.25	47.37½	6.20	6.00		6.25	23.90	9.87½	35.00
Aug. 9	14.75	14.82½	14.37½	48.75	47.37½	6.20	6.00		6.25	23.90	9.90	35.00
Aug. 10	14.75	14.82½	14.37½	48.87½	47.50	6.20	6.00		6.25	23.90	9.90	35.00
Aug. 13	14.75	14.82½	14.37½	48.37½	47.00	6.20	6.00		6.25	23.90	9.90	35.00
Aug. 14	14.75	14.82½	14.37½	48.25	46.75	6.20	6.00		6.25	23.90	10.00	35.00

NEW YORK, Aug. 14.—Summer quietness in the nonferrous metal markets turned about a week ago into increased buying of copper and lead. A little buying previously had been going on quietly every day. Zinc has remained quiet.

Prices all through the list are firm. Lead showed slight easiness on the East St. Louis basis a week ago but the tendency quickly disappeared. Confidence is strong in the metal markets, encouraged with news from the steel industry on unusually large July output and new strength in prices.

Copper—Brass and copper products are being produced at high rates for this season and prices are steady on the basis of 14.75c, Connecticut, for copper. New buying is moderate in wire, and light in brass, but the latter division is well booked several weeks ahead. It is believed that when buyers of products see that all indications point to firmness in the copper market, they will buy more actively.

Stocks of refined copper in the hands of producers are the lowest in ten years. Less than 12 days' supply now is being carried since July shipments were record-breaking and topped production by about 4000 tons, by which amount stocks declined.

Zinc—Prime western has remained unchanged for two weeks at 6.25c, East St. Louis. Buying was active at the time the prompt price took on new firmness but in the past week or so buying has been light. It is believed much buying remains to be done for September shipment. July statistics support the producers in their firmness. Stocks were cut 2258 tons last month. Stocks at the end of the month were 42,210 tons. Shipments set a new record for July, with 49,510 tons going to the domestic outlets and 3638 tons for export. Total shipments for seven months also set a new record. Increased business this year appears to be due to good business in high grade metal with the brass and die casting industries. The galvanizers do not appear to have taken an unusual quantity.

Tin—Business with users was large on Thursday last week but since then the market has been quiet. Prices went up rapidly for several days and then down again. The price movement was most pronounced in spot, where an unusually large premium developed on account of arrivals this month being a little light.

Lead—Buying has been active after a few weeks of quietness. All classes of users came in for prompt and September needs. A little metal on East St. Louis was offered a shade under 6.00c but was quickly taken and the market became firm.

Aluminum—Prices are unchanged and business is fair.—*Daily Metal Trade.*

Exports of iron and steel bars, rods and angles from Germany during June were 92,853, metric tons; imports only 59,849 metric tons.

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	19.25
Copper, hot rolled	23.50
Lead, full sheets (cut ¼c more)	10.00
Zinc (100-pound base)	9.75
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.30
SEAMLESS TUBES	
Yellow brass (high)	24.12½
Copper	25.00
RODS	
Yellow brass (high, full turning)	17.00
Naval brass	19.75
WIRE	
Copper, car lots	16.37½
Yellow brass (high)	19.75

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.50 to 9.75
Chicago	9.25 to 9.50
Cleveland	9.75 to 10.00
HEAVY YELLOW BRASS	
Chicago	7.00 to 7.25
Cleveland	7.50 to 7.75
ZINC	
New York	3.50
Cleveland	3.25 to 3.50
HEAVY COPPER AND WIRE	
New York	12.25
Boston	11.50 to 12.00
Chicago	11.50 to 12.00
Cleveland	12.00 to 12.25
RED BRASS BORINGS	
New York	8.50 to 9.00
YELLOW BRASS TUBING	
Cleveland	7.50 to 7.75
LIGHT COPPER	
New York	10.75
Chicago	10.50 to 10.75
Cleveland	10.75 to 11.00
LIGHT BRASS	
Boston	5.75 to 6.00
Chicago	6.75 to 7.00
Cleveland	6.00 to 6.25
ALUMINUM	
Clippings, Cleveland	17.00 to 17.50
Borings, Cleveland	9.00 to 10.00
Cast, Cleveland	12.50 to 13.00
Cast, Boston	10.50 to 11.00

Secondary Metals

Remelt Aluminum No. 12	16.00
Brass ingot, 85-5-5	12.50 to 13.00

Coke By-Products

Toluol and Benzol Demand Sustained —Naphthalene Shade Weak

New York, Aug. 14.—Particularly good demand still prevails for toluol and benzol. Sellers assert, however, that there are still sufficient supplies to meet requirements with a result that no early advance in prices on these products is in prospect. Toluol prices, in fact, have been unchanged for many months.

With contract buying at a virtual close, sulphate of ammonia is quiet. Export demand prevails but most of this business appears to be going to European competitors, particularly Germany. Meanwhile, sellers continue to quote the export market at nominally $2.35, port, for material in double bags. The great bulk of production being applied to long time contracts placed recently by the fertilizer industry, there does not appear to be much surplus material available.

Naphthalene is quiet with the market holding rather weakly at unchanged prices.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.22	.....
90 per cent benzol	0.22	.....
Toluol	0.35	.....
Solvent naphtha	0.30	.....
Commercial xylol	0.30	.....
Per Pound at Producer's Plants in 250-Pound Drums		
Phenol	0.17	.....
Per Pound at Producers' Plants		
Naphthalene flakes	0.06 to 0.07	
Naphthalene balls	0.06 to 0.07	
Per 100 Pounds Delivered		
Sulphate of ammonia	$2.20	

Quicksilver Is Advanced

New York, Aug. 14.—Quicksilver is strong, with another advance, $1 to $2 in the past week, making it $126 to $127 a flask.

Records of the year 1290 show that iron was supplied for Westminster Abbey from ironworks in Sussex, England.

Warehouse

Sales of Past Week Slipped Off from July Rate but Continue Seasonally Normal—Prices Marked but Little by Changes

BUSINESS of iron and steel warehouses fell off slightly during the past week, most distributing centers dropping behind the rate of earlier weeks of the month and July. Prices were fairly stable during the week.

Excessively hot weather has retarded warehouse demand in the New York metropolitan district. Trading is far from dull and may be described as good for the summer season. Prices are unchanged. Most jobbers look for no revisions in major products this month.

Detroit warehouses are experiencing a slight letdown in demand from the July rate and some are not quite up to the level of last August. Building materials are moving only fairly well. Automotive needs are steady. Prices generally are unchanged.

St. Louis warehouses started the month in good shape, and less than the usual seasonal reaction in demand for early August is noted. Building material especially is making a favorable showing. The building outlook in St. Louis is particularly favorable, July permits showing a gain of $719,559 over the corresponding month last year. Railroads in the Southwest are handling an unexpectedly heavy volume of grain, and their shops have been busily engaged in rush repairs on box cars. This is reflected in a large amount of emergency repair materials going to the several division shops.

Philadelphia jobbers report current bookings as slightly smaller but the volume of sales continues fair. The recent advance to 2.70c on bars is well maintained with the price situation generally firm here.

Improvement in the Cleveland warehouse market in the past week was slight but noticeable. A wider diversification of orders and larger average tonnage per order were encouraging to local jobbers. August is running ahead of July and in some cases ahead of August, 1927. Sales of building materials are in good volume, light structural sections and sheets being in particularly heavy movement. A few products such as wire and nails and some cold finished materials are not moving as well as several weeks ago, but this slack is regarded as temporary and in some cases reflects decreased automotive production.

The blast furnace is said to have originated in the Rhine provinces of Prussia about the beginning of the fourteenth century.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.30c
New York†††‡	3.25c
Philadelphia*	2.70c
Pittsburgh	2.90c
Portland	2.50c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	3.10c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York‡‡	2.80c to 3.24c
Philadelphia*	2.70c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	1.85c to 2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
Los Angeles cl.	2.65c
Los Angeles lcl.	3.00c
New York	2.95c to 3.10c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.75c to 3.175c
San Francisco cl.	2.00c
San Francisco lcl.	2.25c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.30c
New York†††‡	3.25c to 3.30c
Philadelphia	2.40c to 3.00c
Pittsburgh	3.00c
Portland	2.90c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	3.10c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.30c
New York‡‡	3.30c
New York‡‡ (floor)	5.05c to 5.10c
Philadelphia	2.40c to 3.00c
Phila., 3/16-in.	2.60c to 3.20c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED

Baltimore	3.45c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	4.00c
New York‡‡	3.90c
Portland	3.75c
Philadelphia*†	3.15c
Pittsburgh**	3.00c to 3.10c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.75c
Tulsa	4.20c to 4.56c

No. 24 BLACK SHEETS

Baltimore	3.10c to 4.00c
Boston	5.00c
Buffalo	4.20c
Chicago	3.80c
Cincinnati	3.90c
Cleveland	3.40c
Detroit	3.95c
Ft. Worth	4.70c
Los Angeles	4.90c
New York†††	3.70c to 3.80c
Philadelphia*†	3.85c
Pittsburgh‡	3.50c to 3.55c
Portland	4.90c
San Francisco	4.95c
Seattle	5.00c
St. Louis	4.10c
St. Paul	3.95c
Tulsa	4.75c

No. 24 GALVANIZED SHEETS

Baltimore	4.10c to 4.75c
Boston	5.85c
Buffalo	4.70c to 5.05c
Chicago	4.65c
Cincinnati	4.75c
Cleveland	4.25c
Detroit	4.75c
Ft. Worth	5.50c
Houston	5.30c
Los Angeles	5.30c
New York†††	4.50c
Philadelphia*†	4.60c
Pittsburgh‡	4.40c
Portland	5.50c
San Francisco	5.40c
Seattle	5.50c
St. Louis	4.95c
St. Paul	4.90c
Tulsa	5.55c

BANDS

Baltimore	3.85c
Boston	4.015c to 5.00c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.15c
New York‡‡	4.00c
Philadelphia*	3.25c
Pittsburgh	3.60c
Portland	3.75c
San Francisco	4.10c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.00c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York‡‡	4.50c
Philadelphia*	3.50c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons,	Flats, squares
Baltimore	3.35c	3.85c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles (a)	4.50c	.....
New York	3.40c	3.90c
Philadelphia*	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland (a)	4.75c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	5.00c	.....
St. Paul (a))	3.85c	.....
Tulsa	4.66c	5.16c

(a) Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500 pound lots	5.30c
Buffalo	5.85c
Chicago (b)	6.10c
Cincinnati	7.15c
Cleveland (b)	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia (c)	5.00c

(b) Net base, straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	14.00c
Iron bars, rounds	6.25c

Flats and Squares

Baltimore, New York, Phila.	6.60c

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. ‡10 to 24 bundles. **25 or more sheets. *†50 or more bundles. †††Newark-Jersey City 4.00c on black and 4.70c on galvanized the more prevalent figures.

Pacific Coast

Steady Trade Marks Summer —Small Lots Are Rule with Prices Firm

IN GENERAL the Pacific coast is having a normal summer in iron and steel trade and an aggregate of small tonnages is providing a good business, with much more in prospect. Prices are little changed except for minor adjustments. Somewhat less imported material is being received. Public works are supplying much of the season's demand.

SAN FRANCISCO, Aug. 11.—(By Air Mail)—Trading in iron and steel products on the Pacific coast is improving and more activity is noted in cast iron pipe. Structural steel shapes and concrete bar awards continue to lead other products in volume.

Pig Iron and Coke

Pig iron and coke have been quiet the past week and sales and inquiries called for small lots. The inquiry of the navy department for 400 tons of iron for the Puget Sound navy yards, bids being opened last week, is still pending. Quotations are unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00

*C.i.f. duty paid.

Bars, Plates and Shapes

Out-of-stock prices on reinforcing steel bars in the San Francisco district remain at a low level and 1.85c base continues general, although some business has gone as high as 2.00c. Awards this week totaled 2577 tons and brought the aggregate for the year to 60,376 tons, compared with 37,988 tons for 1927. Pacific Coast Steel Co. booked 589 tons for the Big Dalton dam in Los Angeles and 104 tons for a bridge over Niles Canyon in Oakland. An unnamed interest took 459 tons for a storm drain project at Culver City, Calif. Pending business approximates 5000 tons.

The only award of plates this week went to an unnamed eastern mill and involved 131 tons for the Mare Island navy yard. Awards so far this year are only 40 per cent of the total for the same period last year. The Western Pipe and Steel Co., San Francisco, was low bidder on a 36-inch pipe line for the government's Belle Fourche project in South Dakota, involving 105 tons. One of the most important jobs of the year comes up for figures next week and calls for 7200 tons of material for the distributing lines of the East Bay municipal utility district at Oakland. Alternate bids are also to be taken on cast iron and concrete steel lined pipe. While 2.25c to 2.30c is the general range, some smaller producers have quoted 2.20c c.i.f.

Structural steel shape awards this week aggregated 2298 tons, bringing the total for the year to 89,631 tons, compared with 98,011 tons for the corresponding period a year ago. Among the larger lettings were 650 tons for a high school at Great Falls, Mont., booked by the Minnesota Steel & Machinery Co., and 455 tons for a bridge at Saugus, Calif., placed with Claude Fisher. New inquiries continue at a fair rate and pending business exceeds 15,000 tons. Bids open next week on 1400 tons for sheds at pier 45, San Francisco, and on 250 tons for a hangar in Oakland.

Seattle Market Quiet

Seattle, Aug. 8.—Normal volume of business is being done here in iron and steel products in a quiet way. Prices are firm. Less competition from imports is being experienced.

The only plate inquiry of size is for 300 to 350 tons for the Lincoln avenue extension at Tacoma, on which bids will be opened Aug. 13. The Marblemont and Nugent bridges, part of the state highway program, each calling for about 450 tons of shapes, are the largest projects in this line. Bids will be opened Aug. 14. Oregon highway commission will open bids the same day for several jobs, including 170 tons of structurals and 160 tons of reinforcing steel for the Deschutes bridge.

Jobbers have reduced galvanized sheets to 5.50c here and at Portland. The American Cast Iron Pipe Co. has been awarded 1100 tons of cast iron pipe for the Weyerhaeuser Timber Co.'s new plant at Longview, Wash.

Steel Rate in Valley Is Slightly Higher

Youngstown, O., Aug. 14.—Steelworks activities in this district have improved slightly, with Youngstown Sheet & Tube Co. operating at 75 per cent, Republic Iron & Steel Co. around 78 and Carnegie Steel Co. at 75. An additional independent open hearth has been put on, making 43 units active out of 53 independents in the district. Bessemer output is around 60 per cent with the independents. Sheet mill activity includes 107 units out of 127 independents in the district, or one less than last week, while tube mills have 14 units active out of 20. Independent bar mills are at 55 to 60 per cent. The Girard puddle mill of the A. M. Byers Co. has 42 units active out of 88, while its bar and plate mill activity bring the plant total up to 75 per cent capacity.

Object to Proposal To Restrict Groupings

Chicago, Aug. 14.—Chicago traffic managers, examining the report of Examiners Faul and Bardwell in the general iron and steel freight rate investigation, object seriously to the recommendation restricting grouping at points of origin to shipments moving beyond 150 miles and grouping at destination to shipments moving beyond 450 miles. One well-informed traffic manager states:

A rate structure built up as recommended will give a decided advantage to shippers moving traffic in excess of 450 miles with both origin and destination groupings permitted, while restricting the rates to a point to point adjustment on shipments under 150 miles.

Within Indiana and Illinois as a result of the interstate commerce commission decision in the Jones & Laughlin case, Docket 15,110, a grouping basis of rates has been worked out by conference between shippers and carriers, which is generally satisfactory to both. The new proposal destroys all of the work on the part of those who spent a large amount of time and effort in arriving at a satisfactory adjustment.

Within the Pittsburgh, Mahoning and Shenango valley districts for a great many years there have been relatively low short haul commodity rates which move a very substantial volume of semifinished material largely between mills of the same ownership and these rates will all be changed under the proposal of the examiners.

Exceptions to the report of the commissioin are due before Sept. 15, and, no doubt, will include many objections to the recommendation of the examiners with suggested changes in order to avoid the far reaching disturbances in applying the scale and changed grouping basis.

New Discount General

Terms of the Republic Iron & Steel Co., Youngstown, O., on orders for blue annealed, black and galvanized sheets and long ternes for delivery on and after Oct. 1 will be net in 30 days or one-half of 1 per cent for cash in ten days, the discount to be allowed on the mill price. This is in keeping with the revised discount announced two weeks ago by the American Rolling Mill Co., Middletown, O.

Youngstown Sheet & Tube Co., Youngstown, O., and Inland Steel Co., Chicago, have made similar announcements. American Sheet & Tin Plate Co., Pittsburgh, states it has not yet taken action.

Mileage Basis Threatens Disruption of Steel Rate Structure

Relationships Between Producer and Destination Groups To Pass If I. C. C. Accepts Report—Port Differentials May Go

By E. C. Kreutzberg

NEW YORK, Aug. 14.—Steel producers and consumers will have to adjust themselves to a revolutionary change in freight rates on finished steel if the interstate commerce commission adopts the report submitted Aug. 7 by Examiners Howard C. Faul and C. M. Bardwell in Docket No. 17,000, Part 6. This is the general rate investigation initiated in March, 1927.

Study of the report, to which exceptions may be filed until Sept. 15, leads to the view that if adopted there will be a disruption of existing rate relationships between producing districts and consumer destination groups. It will mean a complete overturn of the iron and steel rate structure in official classification territory, which extends east of the Mississippi river and north of the Ohio and a line through southern Kentucky and Virginia to Norfolk.

Probably the most fundamental change recommended is the putting of all rates in that territory on a mileage basis. Trunk line carriers presented a mileage scale, and several of the large shipping interests also introduced distance scales at the hearings. This feature of the report accords with the marked preference shown by the commission in recent years for constructing rates on a distance basis. There is a feeling here, however, that time alone will determine whether a mileage scale, if adopted, will be for the best interests of the steel industry and the railroads.

The basic scale proposed by the examiners is somewhat lower than that proposed by the carriers for trunk line territory. It is higher than any scale proposed by the shippers. The report recommends that the basic scale be applied throughout official territory, excepting New England. Between points in New England territory a scale averaging about 10 per cent higher is recommended.

The basic scale starts at 5 miles at a rate of 6 cents per 100 pounds, and progresses in 5-mile blocks at a rate of one-half cent for each block up to 110 miles. There it changes to 10-mile blocks up to 260 miles, and one-half cent for each block, then progresses in 20-mile blocks with one cent per block to 400 miles, and is continued on up to 1200 miles, for which the rate is 56 cents per 100 pounds.

The report states that the evidence indicates more than 90 per cent of the steel of the United States is produced within the territory covered by the investigation. Producing points are assigned to three grand geographic divisions: Eastern district, including New England, eastern New York, New Jersey, Maryland, Delaware and eastern Pennsylvania; middle district, including the Buffalo district of New York, western Pennsylvania, West Virginia and eastern Ohio; and western district including western Ohio, Kentucky, Michigan, Indiana, Illinois and Wisconsin.

With respect to the eastern district, adoption of the report would lead to changes of great importance. The examiners condemn, to an extent, both the large origin and destination groups now existing and propose the rule that origin groups, where producers are located contiguous to one another, be permitted where the average haul is 150 miles or more, but that destination groups for this distance be not allowed; that destination groups of consuming points be permitted where the distance from the origin group is approximately 450 miles or more.

Under this rule Conshohocken and Pencoyd, now having a carload rate on finished steel to New York of 17½ cents per 100 pounds, would be broken away from the more distant points in the group which now take the same rate to New York. The examiners adopted in their report the recommendations of a former examiner in the Alan Wood Iron & Steel Co. case, Docket 15,490, so that the rates from eastern Pennsylvania plants to New York, if the examiners'

Present and Proposed Mileage Freight Rates on Finished Steel in Middle West

Rates in Cents Per 100 Pounds for Carload Shipments

To		FROM CHICAGO Class Miles	Present	Proposed	FROM PITTSBURGH Class Miles	Present	Proposed
Decatur	Ill.	170	18	19½	524	36	36
Jacksonville	"	216	20	22	597	40½	38
LaSalle	"	99	13	15½	552	38½	37
Moline	"	167	17	19½	632	43	39
Peoria	"	154	16½	19	561	36	37
Quincy	"	263	20	25	680	43	41
Rockford	"	87	12	14½	555	38½	37
Springfield	"	185	18	20½	563	38	37
Evansville	Ind.	286	23½	26	535	37	36
Ft. Wayne	"	148	16½	18½	320	26	27
Indianapolis	"	184	18	20½	371	29	30
Kokomo	"	140	16½	18	375	29	30
Michigan City	"	55	8	11	428	31	33
South Bend	"	86	12½	14½	391	30	31
Terre Haute	"	178	18	20	468	34	34
Vincennes	"	236	22	23	489	35	35
Detroit	Mich	272	27½	25	302	29	27
Grand Rapids	"	184	25½	20½	420	33	32
Greenville	"	235	27½	23	411	33	32
Holland	"	159	23½	19	453	34½	34
Muskegon	"	192	26	21	467	35	34
Saginaw	"	296	29½	26	389	32½	31
Clinton	Iowa	137	17	18	605	43	39
Dubuque	"	172	17	20	640	43	40
Keokuk	"	249	20	23½	674	43	41
St. Louis	Mo.	279	22	25	612	40½	39
Cincinnati	Ohio	285	28	26	311	27	27
Hamilton	"	269	27½	25	297	27	26
Toledo	"	234	26½	23	244	26	23½
Beloit	Wis.	91	12	15	559	44	37
Madison	"	130	14	17½	598	46	38
Milwaukee	"	85	9½	14	553	37	37

report is adopted, are expected to be modified approximately as follows:

To New York from	Miles	Present Rates	Proposed Rates
Bethlehem	88	14.5	14.5
Philadelphia group			
Pencoyd	88	17.5	14.5
Conshohocken	89	17.5	14.5
Ivy Rock	91	17.5	15
Phoenix	101	17.5	16
Coatesville	117	17.5	17

It will be noted that the abovementioned mileages in each case are 10 miles greater than the actual distance. The report approved the plan of carriers to add 10 miles to the Jersey shore rail distance for floatage and lighterage deliveries in New York harbor. At the same time the report disapproves this method with respect to Philadelphia and Baltimore on the ground terminal conditions at the latter two ports are not dissimilar from those at Pittsburgh, Cleveland, Chicago or Boston where no constructive mileage is added to the actual distance.

Will Affect Port Differentials

Pittsburgh rates to the East are radically affected by the recommendation that long-established port differentials at Philadelphia and Baltimore be abolished. If the report is approved, steel freight rates from western points to eastern tidewater cities will be based on actual mileage. This means that under the proposed basic scale the rate from Pittsburgh to New York probably would be 33 cents, compared with the present 34 cents; the rate to Philadelphia from Pittsburgh probably would be 29 cents, compared with the present 32 cents; to Baltimore it probably would be 27 cents, compared with the present 31 cents.

With regard to the Pittsburgh rate to Boston rate territory, a reading of the report indicates the probability that one rate would apply to the entire territory, as at present. While the rate probably would be based on average mileage from Pittsburgh origin points to destination territory, and the exact proposed rate cannot be stated until all factors are considered, it looks as though the rate from Pittsburgh to Boston rate points, including most of New England, would be 38 cents, against 36½ cents at present.

Adoption of the report would mean discontinuance of the existing eastern Pennsylvania group to Boston rate territory. The eastern Pennsylvania origin group extending from west of Jersey City to Harrisburg and south to Baltimore now has a rate of 25½ cents per 100 pounds to all New England points. A reading of the report makes it appear likely that a new origin group comprising mills in the Philadelphia district, leaving out Harrisburg and Baltimore, will be made up so that Philadelphia district mills would have lower rates to New England than mills more distantly located. Rates from the Philadelphia group would apply to individual points in New England, so that Bridgeport, New Haven, Bristol, etc., would take lower rates from Philadelphia district mills than Boston. Correspondingly, rates from Harrisburg and Sparrows Point to New England would be higher than from the rest of the mills comprising the present eastern Pennsylvania origin group.

Present rates from eastern origin points to Baltimore vary for different mills. Under the mileage scale the rates from these mills to Baltimore would undergo some change, depending on the mileage, but there is no indication of any radical change from the present rates from eastern mills to Baltimore.

It is proposed by the examiners that the Philadelphia destination rate group on shipments from the West be broken. This Philadelphia group now includes the territory from east of Harrisburg to Philadelphia and to Wilmington on the south and to Wilkes-Barre, Scranton and Carbondale on the north. This territory is of considerable extent and includes many important consuming plants. Under the proposal the rates from the Pittsburgh district would apply on a mileage basis to the individual points in this territory. All now take a 32-cent rate from Pittsburgh, whereas on a mileage basis, rates for many of these points would be lower.

Would Break Up Group

Likewise, the Scranton destination group including such places as Wilkes-Barre and Carbondale would be broken up so far as the eastern Pennsylvania origin group is concerned. At present a group rate applies from eastern mills to a destination group in northeastern Pennsylvania from Hazleton to Carbondale. Under the report, rates would apply to individual destinations. It is not certain, however, whether the eastern Pennsylvania origin group will be broken up in this case, because origin grouping is permitted by the report on hauls of 150 miles or more. In other words, it appears certain that the acceptance of the proposed plan would be accompanied by establishment of mileage rates from eastern mills to Scranton rate points, and it is also possible that there would be different rates from individual eastern Pennsylvania points to individual Scranton points.

Rochester and Syracuse are centers of destination groups taking a rate of 22½ cents from the eastern Pennsylvania origin group. The provisions of the report would break up these destination groups, the situation there being much the same as described previously in connection with Scranton rate points. A similar situation prevails with reference to many other eastern consuming points.

It may be said in conclusion that the report is being studied by eastern steel producers and consumers with careful attention in order that they may be prepared to make adjustments if the commission assents.

Decreases Lead Changes at Pittsburgh

Pittsburgh, Aug. 14.—Changes in freight rates on iron and steel from Pittsburgh, as proposed to the interstate commerce commission in a report by Examiners Howard C. Faul and C. M. Bardwell, are shown in analytical tables prepared by William L. McKinney, assistant traffic secretary of the chamber of commerce of Pittsburgh. The following table is a typical group, showing the present and proposed rates in cents per 100 pounds, with 11 decreases and 5 increases:

FROM PITTSBURGH

To	Dist. Miles	Present Rate	Prop. Rate	Dec.
Akron, O.	119	19	17	2
Altoona, Pa.	113	15½	17	*1½
Bucyrus, O.	202	25½	21½	4
Canton, O.	101	17½	16	1½
Clearfield, Pa.	129	22	17½	4½
Cumberland, Md.	142	15½	18½	*3
Dayton, O.	262	26	25	1
Franklin, Pa.	115	15½	17	*1½
Fairmount, W. Va.	121	19	17½	1½
Ford City, Pa.	42	11	10	1
Grafton, W. Va.	150	19	18½	½
Mansfield, O.	175	24	20	4
Portsmouth, O.	284	28	26	2
Sharon, Pa.	70	11	12½	*1½
Toledo, O.	244	26	23½	2½
Youngstown, O.	65	11	12	*1

*Increase.

In the following table Mr. McKinney indicates changes proposed in rates to various cities from Pittsburgh and Buffalo:

	PITTSBURGH			BUFFALO		
	Miles	Present	Proposed	Miles	Present	Proposed
New York	426	34	33	390	32	31
Philadelphia	350	32	29	296	32	31
Baltimore	305	31	27	394	32	31
Syracuse, N. Y.	370	28½	30	147	17½	18½
Norfolk, Va.	513	38	36	619	38	39
Lynchburg, Va.	418	38	32	597	38	38
Albany, N. Y.	473	34	34	291	21½	26
Chicago	468	34	34	503	36	36
Cleveland	132	19	18	182	23	20½
East St. Louis, Ill.	612	40½	39	688	44½	41
Cincinnati	311	27	27	425	33	32
Indianapolis	371	29	30	466	34	34
Columbus, O.	191	25½	21	320	27½	29

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

COLUMBIA STEEL CORP., San Francisco, with plants at Provo, Utah, Portland, Oreg., Pittsburg and Torrance, Calif., has appropriated $4,300,000 for plant extensions. The principal addition will be a tin plate mill at Pittsburg, Calif., with annual capacity of 50,000 tons. It is planned to start production Feb. 1, 1929. The mill is estimated to cost $2,500,000.

* * *

E. W. BLISS CO., Brooklyn, has been appointed exclusive licensee of the Bristol Airplane Co. Ltd., Bristol, England, for the manufacture and sale of Bristol Jupiter aero engines in the United States and its territories.

* * *

MILWAUKEE WOVEN WIRE WORKS, 3014-3020 Clark street, Milwaukee, has changed its name to Marquardt Co. The concern specializes in manufacturing bed springs and automobile cushion springs and is adding other lines. R. G. Marquardt is president, and O. H. Stuewe, secretary.

* * *

MOLINE IRON WORKS, Moline, Ill., has elected officers as follows: President, L. E. Nutt; vice president, B. V. Nutt; vice president and secretary, M. C. Nutt; treasurer, J. T. Miles; directors, William Butterworth, Sol Hirsch, J. T. Miles, D. E. Miles, L. E. Nutt, B. V. Nutt, C. R. Rosborough and James F. Walsh.

* * *

ECONOMY ENGINEERING CO., Willoughby, O., has completed an addition to its plant, giving about 50 per cent more space for its machine shop. A heat treating plant is being built in which gas-fired furnaces will be installed. The company builds various types of automatic machinery for bolts and cap screws, including combined automatic pointing and threading machines.

* * *

BILLINGS & SPENCER CO., Hartford, Conn., manufacturer of drop forged tools, forging machinery and special forgings, has opened an office at room 1205, 71 Murray street, New York, to serve metropolitan New York and Philadelphia territory. The office will be in charge of W. Roy Moore, sales manager, assisted by Robert C. Smith, in charge of export sales.

* * *

DRAVO-DOYLE CO., Pittsburgh, now represents the C. H. Wheeler Mfg. Co., Philadelphia, and is able to furnish information required on its products, condensers, air ejectors, augmenters, and compressors, vacuum pumps, heat exchangers for both liquid and vapor, copper expansion joints, swing check valves, steam strainers, cooling towers of natural draft, forced draft or combination.

* * *

B. F. COFFIN MFG. CO., Newark, N. J., which has been engaged several years in the production of thermostats and thermostatic metal, has been incorporated with $100,000 capital stock. B. F. Coffin, Newark, is president and treasurer and George W. True, Middletown, Conn., secretary. The company already has a fully equipped plant and incorporation is to meet business conditions.

* * *

METAL FINISHERS MACHINE CO., Cleveland, designer and builder of automatic and electric controlled strip and sheet polishing machines, has discontinued its demonstrating department at 4001 West Twenty-fifth street. Arrangements have been made with the Ohio Ice Machine Co., 1935 West Forty-seventh street, Cleveland, to build all machinery. Offices have been established at the same address.

* * *

FEDERAL FOUNDRY SUPPLY CO., Cleveland, has occupied its new plant at 4600 East Seventy-first street, Cleveland. This plant, which is situated on three acres owned by the company, includes a main building 90 x 282 feet, an office building 25 x 120 feet, machinery room 60 x 90 feet, stock room 90 x 100 feet and grinding room 90 x 100 feet. The plant is brick, concrete and steel and is situated along a main line switching track.

* * *

H. B. DEMPSEY and H. T. Dyer have organized the Dempsey Furnace Co. Inc., 110 East Forty-second street, New York for the design, manufacture and erection of all types of industrial furnaces. It takes over the business of the Dempsey Furnace Co., a division of the W. N. Best Corp. H. B. Dempsey is president and H. T. Dyer vice president. The former has been in charge of the business since 1925 and the latter has been chief engineer of the Peabody Engineering Corp.

* * *

LOCKWOOD GREENE ENGINEERS INC., has bought from Lockwood, Greene & Co. Inc., the entire business of its engineering division, including its appraisal department. The company is composed of men for many years continuously associated with the engineering activities of Lockwood, Greene & Co. Inc. Offices will be continued at New York, Boston, Spartansburg, S. C., Chicago, Charlotte, S. C., Atlanta and Montreal. All contracts will be taken over by the new company.

* * *

AMERICAN STEEL ENGINEERING CO. heretofore engaged in the sale of concrete reinforcing bars and structural steel, with headquarters in the Fuller building, Philadelphia, has built a plant at 3520 Queen lane, East Falls, Philadelphia. The buildings combine office and warehouse and a fabricating shop. The company now is equipped to fabricate structural steel. The company has been incorporated in Pennsylvania with John H. Smith president and treasurer and C. Warren Miller secretary.

* * *

OKLAHOMA STEEL CASTINGS CO., Tulsa, Okla., has placed a contract with the Industrial Construction Co., Tulsa, for an extension to its finishing department, 50 x 50 feet. Orders have been placed for a 5-ton electric traveling crane with Shepard Electric Crane & Hoist Co.; a 10-ton gas-fired automatic temperature control undervented car type annealing oven to Mahr Mfg. Co., Minneapolis; electric control mechanism to Brown Instrument Co., Philadelphia; rotary table and room sand blast and dust arrester equipment to Pangborn Corp., Hagerstown, Md.

* * *

GENERAL CABLE CORP. has acquired the Detroit Insulated Wire Co. and made it a division under the general supervision of the Rome division of the General Cable Co. W. G. Dalgleish, former vice president and treasurer of the Detroit concern, is

secretary and acting manager of the Detroit division. G. S. Wiley will continue assistant treasurer and will also be assistant manager. Geo. A. Black continues sales manager and D. W. Loye superintendent. Messrs. Hunter and Splane, chief owners of the former company, have severed their connections completely with the organization. The proposed new mill of the General Cable at Mobile, Ala., also will be operated under the general supervision of the Rome division. It is expected that construction will be begun soon.

* * *

ACME IRON & WIRE WORKS, 1927 St. Paul avenue, Milwaukee, has changed its title to Acme Iron & Steel Co. It manufactures a general line of structural and ornamental iron products.

* * *

GURNEY ELEVATOR CO., New York, has moved its general offices to 109 West Sixty-fourth street, occupying the entire twelfth floor.

Ford Starts Disassembly Line for Ships

(*Concluded from Page* 378)

lars, 46 feet in beam and 28 feet 6 inches in depth. They were oil burners of three island, single deck (with 'tween deck beams in Nos. 1 and 4 holds) cargo type, and had Westinghouse turbines with gear reduction of 1440 shaft horsepower and two Babcock & Wilcox water-tube boilers. The deadweight varied from 5085 to 5340 tons, though they were of identical design. The load draft was about 23 feet, and speed was 10½ knots.

The ships were schooner-rigged with two steel masts. They had full upper decks in the hull with partial second decks in the ends; also a raised forecastle, a long bridge and a full poop. At the forward end of the bridge deck there was a steel deckhouse containing the officers' quarters. On top of this was a wooden house containing a chartroom, captain's office and wheelroom. A wooden flying bridge was built at the top of this house.

There were also steel deckhouses, containing engineers' quarters, petty officers' quarters, galley, and so forth, built abreast and abaft the engine casing on the bridge deck. A wooden house containing a hospital and wireless room was on top of the latter houses on the after end. Boiler and engine casing of steel were carried to the level of the top of the deck houses.

The vessels had complete double bottoms extending from the fore peak bulkheads to the tunnel recesses, subdivided longitudinally into six compartments. The compartments under the machinery space were for feed water. All other compartments carried fuel, oil or salt water ballast.

Decks as well as the inner bottom were worked level transversely and fore and aft, except that the upper deck had a straight line shear from the frame forward of the No. 2 hatch to the stem. The forecastle deck and the 'tween deck forward were carried parallel to the upper deck; the poop deck aft had a slight straight line shear.

There were seven water-tight hatches, six running to the upper deck and one forming the forward side of the deep tanks. There were five cargo hatches in the upper deck and one cargo hatch in the bridge deck; also a watertight cargo hatch in the top of the deep tank. The spacing of the frames was 24 inches in the fore and aft peaks and 27 inches elsewhere.

The machinery was located amidships, with the two main boilers abreast and having a screen bulkhead at their after end to separate the boiler and engine room. The carpenter, four boatswains, seamen and firemen were berthed in the poop. All other quarters were amidships.

The keel consisted of a flat plate with double butt straps of scantlings. The vertical keel was continuous from fore peak to after peak. There were two longitudinals or side girders in the double bottom each side of the center line. Extra longitudinals were fitted under the main engine seating and forward to withstand pounding.

Instructions were issued to the three eastern shipyards that everything possible from the ships must be saved. Early in 1926 an order listing some of the articles went forward to the shipyards:

Engine Room Equipment

Engines and boilers must be handled very carefully. Use manila rope on engines so that working parts will not be damaged. Any parts of engines that have to be removed should be boxed and marked: "Keep intact." Every bolt and nut has to be accounted for.

Engines; boilers; auxiliary condensers; blowers; steering engines; gages; thermometers; ammonia ice machines; firing tools.

Steamfitting, Plumbing, Etc.

All piping must be removed without burning or cutting pipe. Remove bolts with wrench if possible; but if impossible bolts may be burnt off. Flanges must not be broken.

Piping; valves; wash bowls; toilets; bath tubs; sinks; radiators; shower bath equipment; miscellaneous bathroom equipment.

Navigating Instruments, Equipment, Etc.

Navigating instruments must be carefully removed and boxed and placed under deck very carefully.

Wireless aerials; wireless instruments; wireless batteries; compass; binnacle; signals; bells; lights (oil and electric); steering wheel; life buoys; sounding machines and instruments.

Deck Equipment

Most of this equipment can be placed under deck at forward hold, with engines, boilers, and so forth.

Winches; windlass; anchors and chains; masts and booms; stacks; pumps; derricks; rigging; life boats and work boats.

Electrical Equipment

All electrical equipment must be taken down very carefully so as not to damage or break. Fixtures, etc., should be boxed. Conduit should be taken out and loaded very carefully. A large quantity of electrical material can be placed under poop deck.

Conduit; light fixtures; alarm bells; switchboards; motors; lamps.

Kitchen Equipment

Kitchen equipment can be placed in kitchen of boat you are loading.

Galley range, coffee urns, water tanks, ice boxes, dishes, dish racks.

Furniture, Outfitting and Various Miscellaneous Equipment

All furniture should be placed under deck and packed snug so as to ride without shifting.

Chairs, desks, lockers, book cases, tables, benches, mattresses, bedding, settees and cushions, cabinet, safes, mirrors, window shades, flags, charts, maps and books, records, fire buckets, life belts, work benches, shovels, hammers, vises, wrenches and miscellaneous tools, tarpaulins and awnings, water hose.

The methods employed at the eastern shipyards were largely those common to all scrapping operations. Detachable parts were first removed. Then acetylene burners cut the steel structures into sizes suitable for loading into the lakers. After a hull had been cut near to the double bottom, it was towed on a marine railway or to a drydock for the final torching.

At an outing of the Indianapolis chapter of the American Society for Steel Treating, June 2, the following officers for the coming year were elected: Chairman, Edward J. P. Fisher, research metallurgist, Diamond Chain Mfg. Co., Indianapolis; vice chairman, Carl J. Winkler, general superintendent, Schwitzer-Cummings Co., Indianapolis; secretary, Nelson R. Gorsuch, industrial engineer, Citizens Gas Co., Indianapolis; treasurer, Richard S. Smith, assistant director of research, E. C. Atkins & Co., Indianapolis.

Continental Markets Are Firm

Rising Tendency Noted in France and Germany as Works Become More Active—British Iron and Steel Production Diminishes in July—500 All-steel Cars Ordered for South Africa—Tin Plate Prices To Be Reviewed Aug. 24

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Aug. 14.—(*By Cable*)—Steel business on the Continent continues to hold the center of interest. The market in France is active, works are well booked, and the tendency of prices is upward. While excessive heat in Belgium has restricted production slightly, general conditions are good. The Antwerp dock strike has been finally settled and traffic again is regular. German trade shows steady improvement, and prices are firmer.

Agents of the British crown are ordering steel supplies for delivery to India. An order for 500 all-steel cars for delivery to South Africa has been placed with a builder in the Midland district. The Redburne Steel Works in North Lincolnshire is reopening after four years' idleness. British tin plate prices are to be reviewed Aug. 24. A contract has been signed with a British firm for a coke oven and by-product plant to cost £4,000,000 for erection in Australia.

Production of pig iron in Great Britain in July totaled 537,800 tons, against 563,700 tons in June and 591,500 tons in May. The number of active stacks July 31 was 131, ten less than on June 30. Steel production in July amounted to 666,900 tons, compared with 709,500 tons in June and 752,700 tons in May.

British Steel Gaining on Continental Mills

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Aug. 3.—(*European Staff Service*)—The iron and steel trade has been much in the limelight this week, owing to the renewed application made to the prime minister for the introduction of safeguarding. Stanley Baldwin, however, has taken a firm stand in spite of the pressure that has been brought to bear and has definitely announced that he does not see his way to grant any such relief.

At this time of year there is usually a falling away of business, and

Sterling $4.86

with the August holiday only a day or two ahead markets this week have been featureless. On the Birmingham exchange yesterday many representatives reported that their works would shut down for a week, and in some cases stocktaking is in progress and little work will be done. The continued rise in the price of continental material should improve the chances of the home producer in obtaining business.

Some useful rolling stock orders have been awarded this week by overseas railways, and to some extent these make up for deficiencies in buying by home lines, which is well below the average. The Argentine has placed orders with the local builders for rolling stock and the Soudan government railways have awarded contracts for 75 thirty-ton bogie covered goods wagons to the Gloucester Railway Carriage & Wagon Co. Ltd. and for 50 thirty-ton open bogie goods wagons to Cammell Laird & Co. Ltd. The needs of the crown colonies are considerable, and a number of orders for locomotives and wagons have been distributed among

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, August 13	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.04	3 6 0*	$15.31	3 3 0	$15.31	3 3 0	$15.80	3 5 0
Basic	15.80	3 5 0	14.58	3 0 0	14.58	3 0 0	15.31	3 3 0
Basic-bessemer	16.77	3 9 0†	14.58	3 0 0	14.58	3 0 0	14.58	3 0 0
Hematite, Phosphorus 0.02-0.05	16.65	3 8 6	26.39	675*	.....	.....	17.01	3 10 0
SEMIFINISHED STEEL								
Billets	$29.16	6 0 0	$23.45	4 16 6	$23.45	4 16 6	$23.57	4 17 0
Wire rods	46.17	9 10 0	29.16	6 0 0	29.16	6 0 0	29.16	6 0 0
FINISHED STEEL								
Standard rails	$37.67	7 15 0	$30.98	6 7 6	$30.98	6 7 6	$30.98	6 7 6
Merchant bars	1.55c	7 2 6	1.29c	5 17 6	1.29c	5 17 6	1.28c	5 16 6
Structural shapes	1.60c	7 7 6	1.07c	4 17 6	1.07c	4 17 6	1.07c	4 17 0
Plates, ship, bridge and tank	1.76c	8 2 6	1.38c	6 7 0	1.38c	6 7 0	1.41c	6 8 0
Sheets, black, 24 gage	2.17c	10 0 0	2.22c	10 15 0	2.22c	10 15 0	2.18c	9 18 0
Sheets, galvanized, 24 gage, corrugated	2.90c	13 7 6	2.98c	13 11 3	2.98c	13 11 3	2.92c	13 5 0
Bands and strips	2.22c	10 5 0	1.50c	6 16 3	1.50c	6 16 3	1.43c	6 10 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.56c	7 2 0
Galvanized wire, base	2.93c	13 10 0	1.98c	9 0 0	1.98c	9 0 0	2.00c	9 2 0
Wire nails, base	2.38c	11 0 0	1.62c	7 7 6	1.62c	7 7 6	1.65c	7 10 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	.....	.....	.....	$ 6.80	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$16.04	3 6 0	$17.20	440(2)	$16.29	585	$18.58	78
Basic pig iron	15.80	3 5 0	18.57	475(1)	15.03	540	20.96	88
Furnace coke	3.16	0 13 0	5.87	150	5.15	185	5.12	21.50
Billets	29.16	6 0 0	21.70	555	25.72	925	28.82	121
Standard rails	1.79c	8 5 0	1.48c	820	1.43c	1.100	1.51c	140
Merchant bars	1.57c	7 5 0	1.28c	710	1.33c	1.025	1.52c	141
Shapes	1.71c	7 17 6	1.17c	650	1.31c	1,010	1.49c	138
Plates, ship, bridge and tank	1.87c	8 12 6	1.54c	855	1.50c	1,150	1.71c	158
Sheets, black, 24 gage	2.28c	10 10 0	2.92c	1,620	2.33c	1,880	2.43c	225
Sheets, galvanized 24 gage, corrugated	2.90c	13 7 6	3.41c	1,895	3.87c	2,975	3.78c	350
Plain wire	2.12c	9 15 0	1.71c	950	1.95c	1,500	2.48c	230
Bands and Strips	2.22c	10 5 0	1.41c	785	1.69c	1,300	1.77c	164

*Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £21 10s 0d ($104.49) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

British builders by the Kenya and Uganda railway.

Pig iron continues depressed, prices are nominal, and as pointed out by a Birmingham merchant, if the business were available these would probably be shaded. But consumers of raw material have satisfied current needs and are not disposed to go further on the eve of a holiday. The output in the Middlesbrough area has been further reduced by the damping down of a furnace at Newport, by Dorman Long & Co. this furnace making hematite. Even now there are ample supplies and quotations vary a good deal from £3 8s ($16.51) to £3 10s ($17.01). In Scotland the works are still on holiday and 20 furnaces are in blast out of a total of about 100.

In the Barrow area the Barrow and Workington rail mills have orders with which to resume after the holidays, but only the hoop mills are working. Makers are hopeful it will not be necessary further to reduce the output of pig iron, particularly as imports have been considerably reduced, showing that continental competition is being effectively met. Demand at present is chiefly from the Midlands, but some superior qualities of iron are being shipped overseas.

The Welsh tin plate market has shown an improving tone this week, partly because tin prices have settled down and also owing to the application of the output restriction scheme. The Far East, the continent and South Africa have come forward with inquiries for substantial lots. Prices are firm at 18s 3d ($4.43), though 18s ($4.37) would be taken as the minimum for export business. Welsh tin plate bars are unchanged at £6 ($29.16) per ton delivered South Wales, but foreign bars are firmer at £5 7s 6d ($26.11) delivered. The market for steel scrap shows a good demand from Germany and South Wales sellers easily realize £3 7s 6d ($16.39) per ton.

British Export Prices Show Little Change

London, July 30.—(*European Staff Service*)—Board of trade returns for June, 1928, give average British export prices per gross ton for certain iron and steel products. These prices are compiled from actual contracts which were made several months ago, and this accounts for the difference between these quotations and the base prices regularly quoted.

Compared with those prevailing a year ago, prices in June this year were lower for foundry pig iron, black sheets, galvanized sheets, and tin plates, but higher for beams, rails, and plates. Compared with May, prices for foundry pig iron, beams, rails, and black sheets were lower, and those for plates, galvanized sheets, and tin plates were higher.

Prices for June follow:

	£	s	d	$
Foundry pig iron	3	11	3	17.28
Beams	9	13	2	46.84
Rails	8	17	2	42.96
Plates	10	17	2	52.66
Black sheets under ⅛-inch thick	12	0	6	58.32
Galvanized sheets	15	8	9	74.87
Tinplates	19	10	4	51.00

French Pig Iron Makes First Half Record

Paris, July 30.—(*European Staff Service*)—The output of pig iron in France for the first six months of 1928 just exceeded the 5,000,000-ton mark, the tonnage being 5,001,000 metric tons, compared with 4,637,000 tons for the first half of 1927. The production of steel ingots and castings also showed an increase from 4,070,000 metric tons for the first half of 1927 to 4,624,000 tons for the first half of this year. In view of the fact that production continues to be active, and that the outlook for the French iron and steel industry is satisfactory, it is to be expected that the production figures for the year 1928 will exceed previous records. The following table gives figures for the first six months of 1928 as compared with the monthly averages of the three preceding years and 1913, in metric tons:

Mon. ave.	Act. fur. on last day	Pig iron	Steel ingots and castings
1913*	131	433,940	390,580
1925	148	707,840	620,540
1926	155	785,965	702,500
1927	142	774,785	689,610
1928			
Jan.	144	809,000	753,000
Feb.	149	785,000	738,000
Mar.	149	858,000	804,000
April	150	834,000	738,000
May	150	871,000	794,000
June	148	844,000	797,000

*In pre-war boundaries.

Luxemburg First Half Output Larger

Luxemburg, July 30.—(*European Staff Service*)—The output of pig iron and steel in Luxemburg during first half showed a slight increase over the figures for the first half of 1927. Pig iron production this year during the period under review was 1,381,223 metric tons, compared with 1,351,243 tons in the corresponding period of 1927. The output of steel ingots and castings this year was 1,270,568 metric tons, as against 1,201,943 tons last year. The following table gives figures for the first six months of 1928 as compared with the monthly averages or the three preceding years and 1913, in metric tons:

Mon. ave.	Pig iron	Steel ingots and castings
1913	212,320	111,355
1925	196,940	173,855
1926	209,295	186,980
1927	226,115	205,850
1928		
Jan.	229,602	212,939
Feb.	220,114	205,053
March	240,234	220,309
April	226,983	202,586
May	233,806	214,756
June	230,484	214,925

Belgian Iron and Steel Make New Record

Brussels, July 30.—(*European Staff Service*)—Belgian production of pig iron, steel, and coke during the first six months of this year exceeded the output of the corresponding period of last year, and in view of the fact that industrial operations continue active, it is expected that this year's output will constitute a new record. The figures for the first half of the year in 1928 and 1927 are respectively as follows: pig iron, 1,906,360 metric tons, as against 1,854,110 tons; steel ingots and castings, 1,911,720 tons, as compared with 1,846,025 tons; rolled products, 1,642,320 tons, as against 1,506,120 tons; coke, 2,916,170 tons, as compared with 2,611,410 tons.

In June this year the output of steel ingots and castings in Belgium reached a record figure. The June output was composed of 319,650 tons of steel ingots and 9260 tons of steel castings. The output of rolled products also constituted a record. The following table gives monthly figures for the first half of 1928 as compared with the monthly averages of the three preceding years and 1913, in metric tons:

Mon. ave	Coke	Act. Furn.	Pig iron	Steel ingots and castings	Finished steel
1913	294,000	....	207,055	205,550	154,920
1925	342,645	....	211,875	212,380	151,215
1926	413,000	....	283,270	281,160	231,810
1927	448,880	....	312,620	309,040	255,185
1928					
Jan.	.....	55	314,580	315,650	277,870
Feb.	455,480	55	302,000	310,410	260,290
Mar.	495,330	55	326,720	326,480	277,070
Apr.	480,990	55	313,220	305,110	259,090
May	506,140	56	328,810	325,160	276,250
June	489,250	56	321,030	328,910	291,750

Belgian Exports Gain

Brussels, July 30.—(*European Staff Service*)—Exports of steel from the Belgo-Luxemburg Economic Union in May were slightly above those of April; these are mainly composed of semifinished steel, rolled products, and scrap. Exports of pig iron in May were much larger than in April, the May tonnage being the largest exported this year.

Imports of steel into Belgium and Luxemburg in May were greater than in April. The following table gives figures for the first five months of 1928 as compared with the monthly averages of the three preceding years, in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Steel	Pig iron	Steel
1925	27,095	15,860	8,060	242,325
1926	27,505	27,265	13,105	304,075
1927	31,760	27,715	11,350	387,415
1928				
Jan.	37,625	34,357	6,793	289,854
Feb.	40,293	37,481	7,952	401,502
March	43,612	31,294	11,971	458,377
April	36,769	29,203	9,583	325,728
May	36,506	31,971	15,317	338,052

French Trade Steady

Paris, July 30.—(*European Staff Service*)—Exports of the principal iron and steel products from France during May were about equal to these in April. Exports of pig iron increased slightly. Imports of pig iron were larger. The following table gives comparisons in metric tons:

	IMPORTS		EXPORTS	
Mon. ave.	Pig iron	Steel	Pig iron	Steel
1925	2,693	11,703	58,835	272,270
1926	1,990	11,930	58,545	264,530
1927	3,230	6,490	69,640	363,305
1928				
Jan.	2,472	3,663	57,496	328,269
Feb.	5,246	7,548	49,515	415,148
Mar.	4,422	8,913	57,534	377,351
Apr.	2,864	10,348	46,499	319,753
May	4,506	10,803	48,725	319,028

Industrial Men in the Day's News

Henry A. Barren, Vice President of American Steel & Wire Co.

ENTERING the steel industry as an apprentice when he was only 15 years old, he has stayed in the business successfully and continuously.

HIS early experience, gained from working in and around the shops and mills, is proving of great value in his present responsible executive position.

THOUGH busy almost constantly, he has found time to devote to recreation. His favorite outdoor sport is golf.

Photo by Bachrach

MAKING an early start in the steel industry as an apprentice boy when he was only 15 years old, Henry A. Barren has ascended step by step to his present responsible executive position, that of vice president of operations of the American Steel & Wire Co., Cleveland. With the exception of three years when he attended college, Mr. Barren has been associated with the steel industry continuously since his apprenticeship.

Mr. Barren was born in Cleveland, Jan. 27, 1862. He received his public school education in that city and then hired out as apprentice to the Cleveland Rolling Mill Co. in 1877. He remained there for five years, and during that time was spending his nights studying, preparing for an entrance examination to Ohio State university, Columbus, O. At the end of the five years Mr. Barren took the examination and was admitted to the university, enrolling in a special mechanical engineering course. He left the university in 1885, three years later, and returned to the Cleveland Rolling Mill Co., where he held a position as a draftsman.

He continued in this position from 1885 until 1891 and then became a master mechanic, serving in that capacity until the Rolling Mill company was absorbed by the American Steel & Wire Co., about 1898. Two years after the Rolling Mill company was taken over, Mr. Barren was made general superintendent of the Newburgh works. Later the stacks at the Central Furnace plant were placed in his charge.

In 1912 Mr. Barren was named general superintendent of plants and furnaces in the Cleveland and Pittsburgh district, and he remained in this executive position for 12 years. At the end of that time he was advanced to be general superintendent of all works of the American Steel & Wire Co. In January of this year, following the election of John S. Keefe to the presidency of the Steel & Wire company, Mr. Barren was elected a vice president in charge of operations.

Essentially a hard worker, yet he has found time to give to organizations and to personal enjoyment. Technical groups of which he is a member include the American Iron and Steel institute and the American Zinc institute. His outdoor exercise and recreation are obtained from playing golf and he is a member of the Shaker Heights Country club, Cleveland; the Worcester club, Worcester, Mass., and the Duquesne club, Pittsburgh.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

ALBERT E. GROVER, cost accountant with more than 20 years' experience, has been named cost consultant of the National Machine Tool Builders' association. Mr. Grover started his cost accounting work with the Geneva Metal Wheel Co., Geneva, O., in 1905. Seven years later he was employed by Nau, Rusk & Swearingen, Cleveland, public accountants. During eight years with this organization he specialized in foundry systems. Later he became comptroller for the Dunham Co., Berea, O. Recently he has had his own cost accounting practice.

* * *

Harvey M. Clymer, general manager of sales, Lebanon Iron Co., Lebanon, Pa., has been elected vice president of that company.

* * *

Troll W. Yocum, executive of the American Petroleum institute, has been elected managing director of the Oil Heating institute and the American Oil Burner association.

* * *

Gifford K. Simonds, general manager of the Simonds Saw & Mfg. Co., Fitchburg, Mass., has been elected to the directorate of the International Paper Co.

* * *

J. N. Meyer, recently with the Comfort Printing & Stationery Co., has become associated with the Copper-Clad Malleable Range Co., both of St. Louis, as advertising manager.

* * *

Roy F. Anderson, formerly chief engineer of the Hayes-Ionia Body Corp., Grand Rapids, Mich., has been made vice president in charge of engineering for the company.

* * *

Paul W. Austin, for the past five years with Charles F. Dowd Inc., Toledo, advertising agency, has become associated with Defiance Spark Plugs Inc., also of Toledo, as assistant advertising manager.

* * *

W. H. Shoemaker has retired as superintendent of erection of the Phoenix Bridge Co., Phoenixville, Pa., because of ill health. He had been connected with this company 17 years. J. F. Kinter has been appointed his successor as superintendent of erection and Reginald J. Carney has been appointed assistant to the superintendent.

* * *

William A. Brecht has been elected president of the Hajoca Corp., Philadelphia, succeeding J. Harvey Borton. Mr. Brecht had been vice president of the Hajoca Corp. and formerly was president of the Krupp Foundry Co., Lansdale, Pa., one of the companies merged in the Hajoca Corp.

ALBERT E. GROVER

* * *

William C. Dickey, New York, will sail for Paris Aug. 29 and plans to return late in September. Mr. Dickey is district representative in New York for the Worth Steel Co., Claymont, Del., the Thomas Steel Products Co., Warren, O., the New Haven Copper Co., New Haven, Conn., and other companies.

Announce Trade Show

Electrical contractors, wholesalers, retailers and buyers of electrical goods, and all others engaged in the business of distributing and supplying electrical appliances throughout the United States will take part in a trade show in Grand Central Palace, New York, Oct. 17-19. While this will be the first national electrical trade show ever held, it is announced that it is really an expansion on a national basis of the annual electrical show, with the first three days set apart exclusively for the trade, and the final seven days open to the general public.

DeathRateHigher,InjuriesLower at Ore Mines

Washington, Aug. 14.—A slight rise in the death rate and a small reduction in the lost-time injury rate were the main facts revealed by an examination of records in the metallurgical industry, exclusive of blast furnaces and steel plants, in the calendar year 1926. The number of men killed per thousand 300-day workers at iron ore mines corresponded to 4.23, compared with 2.54 in 1925. At coke ovens the number was 2.10 against 1.16 in 1925. Coal mines lost 4.50 by death, in contrast with 4.65 in 1925. The number of men injured per thousand 300-day workers at iron ore mines was 133.93 in 1926, against 159.43 in the preceding year. For coke ovens the number was 79.13 in 1926 to 70.51 in 1925. The data for coke ovens cover beehive and by-product works. The injury rate for coal mines is reported by the bureau of mines as "not available."

Arrange Structural Steel Welding Research

Printed copies of the program of research of the structural steel welding committee of the American Welding society recently have been distributed to about 40 leading fabricating shops throughout the country, which have indicated a willingness to participate in the work. The program is divided into the following sections: General information; qualifications of welders; welding specifications for test specimens; inspection and supervision; design of test specimens; procedure for testing test specimens. Definite specimens are now being assigned for preparation to these shops.

Exports of iron and steel products from Germany in June increased by 42,709 metric tons over those of the previous month.

Obituaries

JAMES B. Laughlin, 64, director and a member of the executive committee of the Jones & Laughlin Steel Corp., Pittsburgh, died at his summer home at Hyannis Port, Mass., Aug. 12. He had retired from business because of ill health. Mr. Laughlin was born in Pittsburgh and was a graduate of Princeton university, Princeton, N. J. He entered the steel industry at the Eliza furnaces of the Jones & Laughlin company and was superintendent from 1894 to 1900. He was made treasurer in 1904, retiring in 1910. Mr. Laughlin was the son of Henry A. Laughlin, one of the three original Laughlins. Mr. Laughlin also was vice president and director of the Pennsylvania Trust Co., Pittsburgh.

* * *

Robert Horsburgh, vice president of Horsburgh & Scott Co., Cleveland, died recently.

* * *

C. Kemble Baldwin, vice president, Robins Conveying Belt Co., New York, died Aug. 9 at Los Angeles. He was born in Philadelphia in 1873 and was graduated in 1895 from Lehigh university, Bethlehem, Pa.

* * *

Alonzo C. Packer, 76, pioneer locomotive builder, died Aug. 6 in Pittsburgh. He was born at Strattonsville, Pa., and invented the Packer locomotive truck. Mr. Packer had been connected with the H. K. Porter Co., Pittsburgh, for the past 57 years.

* * *

William A. Parker, 65, for 23 years purchasing agent of the Bessemer & Lake Erie railroad, and the Union railroad of the United States Steel Corp., Pittsburgh, died Aug. 6, at his farm at Hesston, Huntingdon county, Pa.

* * *

Jacob C. Steinfurth, 70, president and superintendent of the Cascade Foundry Co., Erie, Pa., died recently in that city. Mr. Steinfurth was born in Bodin, Germany and came to this country when a boy. He was one of the founders of the Cascade plant, organized 27 years ago.

* * *

Joseph Dayton Bascom, 78, chairman of the board of the Broderick & Bascom Rope Co., St. Louis, manufacturer of wire rope, died at his home in that city last week. He was born in St. Louis and when 13 years old started his business career as office boy. Later he was bookkeeper and salesman and in 1876 with John J. Broderick established the firm of Broderick & Bascom. In 1882 the name was changed to its present style.

* * *

Waldemar Dyrssen, who on Aug. 4 died as the result of an automobile accident, had been identified with the Blaw-Knox Co., Pittsburgh and Blawnox, Pa., as chief engineer of the furnace equipment department since 1924. Mr. Dyrssen was born at Stockholm, Sweden, in 1886 and was graduated from the Royal Technical university of Stockholm as metallurgical engineer in 1908. For one year, in 1909, he was with Les Petits Fils de Francois de Wendel et Cie, Alsace-Lorraine, as designing engineer in the department of construction. Following that for three years he was with the Uddeholm Co., Sweden, as blast furnace and open-hearth superintendent and then became affiliated with the Bethlehem Steel Co., Bethlehem, Pa., from 1913 to 1915 as designing engineer in the department of construction. From 1915 until 1924 he was employed by the United States Steel Corp., New York, as metallurgical engineer and in the latter year became affiliated with the Blaw-Knox Co., as chief engineer of the furnace equipment department. During his employment with the Steel corporation he took part in the development of the Heroult electric furnace and metallurgical matters in general under the late W. R. Walker and J. H. Gray.

WALDEMAR DYRRSEN

* * *

Harry E. Higgins, formerly vice president of the Otis Steel Co., Cleveland, and also with the Standard Oil Co. at one time, died in an airplane accident in Palo Alto, Calif., Aug. 11. Mr. Higgins retired from his Cleveland business connections about a year ago.

* * *

Warren Elsey, 80, retired transportation master of the Vesta Coal Co., subsidiary of the Jones & Laughlin Steel Corp., died Aug. 11 at Philadelphia. Captain Elsey became affiliated with the Jones & Laughlin Steel Co. at 16, and in 1867 built the first car ferry on the Monongahela river, transporting railroad cars between the Pittsburgh and Southside works of that company. Thirty years later he was appointed river transportation manager for the company.

Produces Much Wire

Wire and wire products manufactured at Worcester, Mass., in 1927 were valued at $35,000,000, according to the industrial survey committee of the Worcester chamber of commerce. The committee reports 6565 were employed in the industry and wages totaled nearly $10,000,000. The report noted that wire was one of the first products made in Worcester and that products range from razor blades to bird cages.

Boring Bar Attached to New Engine Lathe

Niles Tool Works Co., Hamilton, O., has completed for a foreign locomotive manufacturer, a 36-inch x 22-foot lathe with boring bar attachment for turning, boring and recessing large bushings for 3-cylinder locomotive cylinders. In this country the general practice would be to perform these operations on a vertical boring and turning mill, but the design of the bushings and certain other factors have made it more advantageous to revert to an engine lathe. The machine is a standard engine lathe with the addition of a boring bar bracket bolted across the wings of the carriage supporting a heavy boring bar.

First Half Iron Output Lower

Compiled by American Iron and Steel Institute

HALF-YEARLY PRODUCTION OF PIG IRON BY STATES.*

States.	Blast furnaces. (a)				Production of pig iron not including ferro-alloys—Gross tons.		
	In blast Dec. 31, 1927.	June 30, 1928.					
		In.	Out.	Total.	First half of 1927.	Second half of 1927.	First half of 1928.
Massachusetts	1	1	0	1			
New York	13	12	9	21	1,317,674	1,297,882	1,213,685
New Jersey	0	0	2	2			
Pennsylvania	48	52	49	101	6,374,364	5,092,093	5,762,007
Maryland	5	5	1	6			
Virginia	1	1	12	13	491,589	449,912	525,253
Alabama	18	16	19	35	1,461,562	1,296,825	1,252,229
Texas	0	0	1	1			
West Virginia	2	3	2	5			
Kentucky	1	2	3	5	389,361	422,393	413,611
Mississippi	0	0	1	1			
Tennessee	2	2	10	12			
Ohio	35	44	19	63	4,418,633	3,988,610	4,296,980
Illinois	16	15	10	25	1,840,038	1,748,425	2,042,079
Indiana	11	14	4	18			
Michigan	10	8	3	11	2,337,441	1,862,076	2,345,888
Wisconsin	1	0	5	5			
Minnesota	2	2	1	3	227,381	228,346	165,179
Missouri	0	0	2	2			
Colorado	3	3	2	5	344,027	269,600	295,430
Utah	0	1	0	1			
Total	169	181	155	336	19,202,070	16,656,162	18,312,341

(a) Completed and rebuilding pig iron furnaces.

HALF-YEARLY PRODUCTION OF COKE PIG IRON BY STATES.*

Massachusetts	1	1	0	1			
New York	13	12	9	21	1,317,674	1,297,882	1,213,685
New Jersey	0	0	2	2			
Pennsylvania	48	52	49	101	6,374,364	5,092,093	5,762,007
Maryland	5	5	1	6	491,589	449,912	525,253
Virginia	1	1	12	13			
Alabama	18	16	17	33	1,456,798	1,294,302	1,252,229
Texas	0	0	1	1			
West Virginia	2	3	2	5	378,629	411,614	404,993
Kentucky	1	2	3	5			
Tennessee	1	1	8	9			
Ohio	35	44	19	63	4,418,633	3,988,610	4,296,980
Illinois	16	15	10	25	1,840,038	1,748,425	2,042,079
Indiana	11	14	4	18	2,267,885	1,795,861	2,275,403
Michigan	4	4	0	4			
Wisconsin	1	0	5	5	227,381	228,346	165,179
Minnesota	2	2	1	3			
Missouri	0	0	2	2			
Colorado	3	3	2	5	344,027	269,600	295,430
Utah	0	1	0	1			
Total	162	176	147	323	19,117,018	16,576,645	18,233,238

HALF-YEARLY PRODUCTION OF CHARCOAL PIG IRON BY STATES.*

Alabama	0	0	2	2			
Tennessee	1	1	2	3	85,052	79,517	79,103
Mississippi	0	0	1	1			
Michigan	6	4	3	7			
Total	7	5	8	13	85,052	79,517	79,103

HALF-YEARLY PRODUCTION OF ALL KINDS OF FERRO-ALLOYS BY STATES.†

New York	1	1	1	2	64,776	95,019	93,192
New Jersey	0	0	0	0			
Pennsylvania	6	8	1	9	199,094	164,048	185,021
Virginia	0	1	0	1			
West Virginia	0	0	0	0	40,586	18,827	29,407
Tennessee	0	1	0	1			
Alabama	0	1	0	1			
Ohio	2	2	3	5			
Illinois	0	0	0	0			
Michigan	0	0	0	0	61,028	64,036	66,451
Iowa	0	0	0	0			
Colorado	0	0	0	0			
Total	9	‡14	5	|| 19	365,484	341,929	374,071

HALF-YEARLY PRODUCTION OF PIG IRON AND FERRO-ALLOYS ACCORDING TO FUEL USED.

Coke pig iron	162	176	147	323	19,117,018	16,576,645	18,233,238
Charcoal pig iron	7	5	8	13	85,052	79,517	79,103
Total pig iron	169	181	155	336	19,202,070	16,656,162	18,312,341
Total ferro-alloys	9	14	5	19	†365,484	†341,929	†374,071
Grand total	178	195	160	355	19,567,554	16,998,091	18,686,412

* Does not include the production of ferro-manganese, spiegeleisen, ferro-silicon, or other ferro-alloys.

† Includes ferro-manganese, spiegeleisen, ferro-silicon, and other ferro-alloys made in blast furnaces or in electric furnaces.

‡ During the first half of 1928 there were 16 blast furnaces in operation making ferro-alloys only or ferro-alloys and pig iron.

|| Blast furnaces only; electric furnaces not included.

HALF-YEARLY PRODUCTION OF BASIC PIG IRON.

States.	First half of 1927.	Second half of 1927.	First half of 1928.
Massachusetts, New York	424,856	498,610	518,625
Pennsylvania—Allegheny County	1,795,268	1,465,197	1,787,345
" Other counties	2,005,274	1,576,737	1,855,362
Maryland, W. Va., Ala., Kentucky	1,087,654	846,735	1,141,242
Ohio	2,166,811	1,912,209	2,170,385
Indiana, Illinois	2,552,221	2,136,209	2,781,455
Michigan, Minnesota, Colorado, Utah	464,329	424,954	461,574
Total Gross tons.	10,496,413	8,860,651	10,715,988

HALF-YEARLY PRODUCTION OF BESSEMER AND LOW-PHOSPHORUS PIG IRON.

Pennsylvania	1,961,151	1,569,739	1,784,783
N. Y., Md., W. Va., Tenn., Ala	670,219	636,223	497,099
Ohio	1,570,035	1,263,075	1,395,124
Indiana, Illinois	792,317	643,156	780,748
Total Gross tons.	4,993,722	4,112,193	4,457,754
Including low-phosphorus pig iron.	194,033	218,844	160,681

HALF-YEARLY PRODUCTION OF FOUNDRY PIG IRON.

Massachusetts, New York	600,756	510,331	435,834
Pennsylvania	486,879	419,117	247,567
Maryland, Virginia, Kentucky, Tenn	98,103	126,766	89,238
Alabama	630,087	677,409	585,902
Ohio	339,010	479,416	285,049
Illinois	234,234	234,206	220,730
Michigan	224,098	187,510	175,303
Wisconsin, Minnesota, Utah	130,039	126,458	65,775
Total Gross tons.	2,743,206	2,761,213	2,105,398

HALF-YEARLY PRODUCTION OF MALLEABLE PIG IRON.

New York	130,174	114,516	106,426
Pennsylvania	41,009	33,733	32,757
Ohio	335,789	317,182	438,420
Kentucky, Illinois, Michigan, Minn	337,096	390,084	368,996
Total Gross tons.	844,068	855,515	946,599

HALF-YEARLY PRODUCTION OF FORGE PIG IRON.

New York, Pennsylvania	84,127	27,533	51,668
Virginia, Alabama, Ohio	11,318	21,554	9,257
Total Gross tons.	95,445	49,087	60,925

HALF-YEARLY PRODUCTION OF MISCELLANEOUS GRADES OF PIG IRON AND DIRECT CASTINGS.

New York, Pennsylvania	2,327	1,717	2,879
Alabama	6,265	2,745	2,295
Ohio	6,988	4,804	6,507
Ind., Ill., Mich., Wisconsin, Colorado	13,636	8,237	13,996
Total Gross tons.	29,216	17,503	25,677

HALF-YEARLY PRODUCTION OF FERRO-ALLOYS BY KINDS.

Ferro-manganese and spiegeleisen	222,460	171,886	205,073
Ferro-silicon	125,637	152,640	152,389
Ferro-phos. and all other ferro-alloys	17,387	17,403	16,609
Total Gross tons.	365,484	341,929	374,071

PIG IRON AND FERRO-ALLOYS MADE FOR SALE OR FOR USE OF MAKERS IN THE FIRST HALF OF 1928.

Pig iron and ferro-alloys.	For sale.	For maker's use.	Total. Gross tons.
Pig iron:			
Basic	810,714	9,905,274	10,715,988
Bessemer and low-phosphorus	227,164	4,230,590	4,457,754
Foundry	1,902,382	203,016	2,105,398
Malleable	844,586	102,013	946,599
Forge or mill	26,604	34,321	60,925
White and mottled, direct castings, etc.	3,255	22,422	25,677
Total pig iron Gross tons.	3,814,705	14,497,636	18,312,341
Ferro-alloys:			
Ferro-manganese and spiegeleisen	86,081	118,992	205,073
Ferro-silicon	152,389	.....	152,389
All other ferro-alloys	16,609	.....	16,609
Total ferro-alloys Gross tons.	255,079	118,992	374,071
Total pig iron and ferro-alloys G. T.	4,069,784	14,616,628	18,686,412

Pig Iron Tonnage at Average of Production of Last Year

PRODUCTION of pig iron and ferroalloys in the United States during first half of 1928 was 18,686,412 gross tons, according to official statistics of the American Iron and Steel institute. Compared with the 19,567,554-ton output of the first half of 1927, this was a loss of 881,142 tons or 4.5 per cent. Against 16,998,091 tons produced during last half, the 1928 first half total was an increase of 688,321 tons or 4.05 per cent.

Production statistics of the institute, reproduced on the opposite page, show the various divisions of 1928 production, compared with those of 1927. Following the plan initiated two years ago ferroalloy production is classified separately, with the tonnage included in the total.

Of the total of 18,686,412 tons of pig iron and alloys produced in first half of 1928, pig iron was 18,312,341 tons and ferroalloys 374,071 tons. In the first half of 1927 the division was 19,202,070 tons of pig iron and 365,484 tons of ferroalloys; during last half it was 16,656,162 tons of pig iron and 341,929 tons of alloys.

Of the 18,686,412 tons of pig iron produced during first half of 1928 18,233,238 tons was made with coke fuel and 79,103 tons with charcoal. In the first half of last year 19,117,018 tons was made with coke and 85,052 tons with charcoal. Charcoal iron dropped back to a tonnage about equal to that of first half of 1926. No iron has been made with anthracite or mixed anthracite and coke since 1923.

As to grades, production during first half of 1928 was as follows: Basic, 10,715,988 tons; bessemer and low phosphorus, 4,457,754 tons; foundry, 2,105,398 tons; malleable, 946,599 tons; forge or mill, 60,925 tons; white and mottled, direct castings, etc., 25,677 tons; ferromanganese and spiegeleisen, 205,073 tons; ferrosilicon, 152,389 tons; other ferroalloys, 16,609 tons. Compared with the corresponding period of last year, basic shows a gain of 2.09 per cent; bessemer a loss of 10.71 per cent; foundry a loss of 23.2 per cent; malleable a gain of 12.13 per cent; forge iron a loss of 36.2 per cent. Miscellaneous grades of pig iron and direct castings lost 12.15 per cent, from 29,216 to 25,667 tons. Ferroalloys increased from 365,484 tons to 374,071 tons.

Of the total pig iron and ferroalloys made during 1928 first half, 4,069,784 tons was made for sale and 14,616,628 tons for the maker's own use. The ratio of merchant iron was 21.8 per cent, against 32.1 per cent last year, 32.4 two years ago and 31.2 per cent for the same period three years ago.

According to tonnage produced Pennsylvania continues its lead, with 5,762,007 tons, Ohio second with 4,296,980 tons and Illinois third with 2,042,079 tons. Pennsylvania and Ohio produced 53.85 per cent of the total. On a percentage basis Pennsylvania made 30.85 per cent of the total; Ohio, 23.0 per cent; and Illinois 10.95 per cent. The total production of the three states was 64.8 per cent. The corresponding figure for 1927 was 65.8 per cent. On June 30, 181 furnaces were active and 155 were idle. The corresponding figures for 1927 were 193 furnaces active and 158 out of blast.

Metal Institute Program Details Completed

The complete program of the autumn meeting of the British Institute of Metals is now available. The institute will convene in Liverpool, England, Sept. 4-7, and about 200 persons are expected to participate. Afternoons will be devoted to visits to works in the vicinity of Liverpool. On the mornings of Sept. 5 and Sept. 6 the following papers will be presented:

"Laboratory Experiments on High-Temperature Resistance Alloys," by C. J. Smithells, S. V. Williams, and J. E. Avery.
"Corrosion at Discontinuities in Metallic Protective Coatings," by U. R. Evans.
"The Constitution of the Alloys of Aluminum with Copper, Silicon and Iron," by A. G. C. Gwyer, H. W. L. Phillips, and L. Mann.
"The Copper-Magnesium Alloys. Part III," by W. R. D. Jones.
"Note on Practical Pyrometry," by G. B. Brook and H. J. Simcox.
"Eighth Report to the Corrosion Research Committee. The Corrosion of Condenser Tubes. 'Impingement Attack,' Its Causes and Some Methods of Prevention," by R. May.
"The Rockwell Hardness Test," by J. E. Malam.
"Die Casting Alloys of Low Melting Point," by T. F. Russell, W. E. Goodrich, W. Cross, and N. P. Allen.
"Work-Softening of Eutectic Alloys," by F. Hargreaves.
"Die Casting of Copper-Rich Alloys," by R. Genders, R. C. Reader, and V. T. S. Foster.
"The Alpha Phase Boundary of the Copper-Silicon System," by C. S. Smith.
"Properties and Production of Aluminum Die Castings," by S. L. Archbutt, J. D. Grogan, and J. W. Jenkin.
"Methods for Investigating Alloys of Reactive Metals," by W. Hume-Rothery.
"The Strength of a Cadmium-Zinc and of a Tin-Lead Alloy Solder," by C. H. M. Jenkins.
"Notes on the Treatment of Aluminum and Aluminum Alloys with Chlorine," by D. R. Tullis.

The American Refractories institute has issued as bulletin 24, "A Nontechnical Description of Spalling Action," which comprises a brief consideration of the thermal, mechanical and structural reasons for the spalling of furnace refractories. Spalling is defined as the breaking or cracking of refractories to such an extent that fragments are separated, presenting newly exposed surfaces of the residual mass.

Company To Install Big Turbo-Generator

The New York Edison Co., New York, has closed a contract for the installation of its new East River generating station, located on East River at Fourteenth street, of steam generating units that will supply the steam to drive a new turbo-generator capable of developing 160,000 kilowatts or 215,000 horsepower. The generator is still in the process of manufacture at the shops of the General Electric Co., Schenectady, N. Y., and is claimed to be the largest generator in the world. Delivery and setting up of the first part of this generator is expected to take place in October or November, according to officials of the New York Edison Co.

Metalworking Machinery Exports Show Gain

United States exports of industrial machinery during the month of May reached a total value of $19,000,000 as compared with $16,226,000 for the preceding month, and representing a gain of 25 per cent over May, 1927. Shipments for the first five months of 1928 were $82,801,874, being more than 10 per cent in excess of the $74,941,934 export valuation for the corresponding period of last year. Trade gains in metalworking machinery have kept step with those of industrial machinery, showing an increase of 34 per cent for the first five months of 1928. Large gains in this group were made by lathes, which rose from $984,000 to $1,624,000 and drilling machines which increased from $298,000 to $488,000.

May Develop Real Estate

Stockholders and creditors of the Eagan-Johnson Steel & Iron Co., Crum Lynne, Pa., at a meeting July 17 discussed the possibilities of financial relief for the company through developing the 17 acres adjoining the plant but not used for its operations. Refinancing on such a basis is held by officers to be preferable to bankruptcy proceedings. Officers were authorized to negotiate a loan not to exceed $15,000 to settle a federal tax claim.

Organize Wrought Iron Co. of America

New York, Aug. 14.—Stockholders of the Lebanon Iron Co. have been notified of a special meeting to be held in September, when they will be asked to ratify a stock exchange agreement, whereby they will receive the equivalent of their present holdings in a new company to be known as the Wrought Iron Co. of America. The latter company is to comprise the Lebanon Iron Co. and the Scranton Bolt & Nut Co. and it is expected that Charles Hart, newly elected president of the Scranton Bolt & Nut Co., will be elected president of the Wrought Iron Co. of America. Mr. Hart, leading figure in the development, is president of the Delaware River Steel Co., Chester, Pa., and it is understood that his interest in the Lebanon Iron Co. and the Scranton Bolt & Nut Co. results from his friendship with the late William C. Sproul, formerly governor of Pennsylvania, who had heavy holdings in the Lebanon Iron Co.

Rail Mill Schedules Are Higher at Chicago

Chicago, Aug. 14.—Steelworks operations in the Chicago district appear slightly stronger, although rated operations are 75 per cent. Rail mill operations have stepped up about 5 points and bar mill operations are probably a shade stronger. Structural and plate mill output is unchanged. Twenty-five of the 36 steelworks furnaces of the district are active. The leading interest has eight of its 12 steelworks furnaces in blast at Gary, seven at South Chicago, and one at Joliet.

Agree on Ship Service to Indian Ports

New York, Aug. 14.—An agreement has been made between the shipping board and the Isthmian Steamship line, a subsidiary of the United States Steel Corp., concerning steamship services with India. One result is to secure American steamers an adequate share of jute, burlap and other Indian products homeward.

The shipping board will have 12 sailings annually from Calcutta and Colombo to North Atlantic ports and Isthmian line 6. The shipping board will have 12 annual sailings from New York to these Indian ports, and the Isthmian line 4. The Isthmian line will continue its 12 sailings annually from Calcutta and Colombo to South Atlantic and Gulf ports.

Tractor Shipments Off

Washington, Aug. 14.—Shipments in July of electric industrial trucks and tractors dropped slightly from the June total, figures supplied by the department of commerce show. Following are monthly comparisons:

		Domestic All other	
1927	Tractors	Types	Exports
July	12	73	5
Total 7 mos.	90	619	76
August	3	87	2
September	8	66	5
October	11	81	17
Nov.	15	64	19
Dec.	8	77	11
1927 Total	135	994	130
1928			
January	5	98	9
February	15	86	18
March	18	97	16
April	9	122	6
May	8	95	13
June	6	97	14
July	5	87	15
Total 7 mos.	66	682	91

Tractor Profit Higher

Caterpillar Tractor Co., including Western Harvester Co., for the quarter ended June 30 showed a profit of $2,811,664 after depreciation but before federal taxes, and for the six months this year profit was $4,292,897 before federal taxes, as compared with $3,382,139 in the first half of 1927.

Less Track Work Made

New York, Aug. 14.—Production of track work in July totaled 11,776 tons, compared with 13,716 tons in June and 41,368 tons in the second quarter, states the American Iron and Steel institute.

Mirrors of Motordom

(*Concluded from Page* 390)

land, hard enough to provide good foundations and with marsh land for dumping nearby. From the new channel would be diverted some of the Lake Superior iron ore now going to Lake Erie ports. At water's edge also would be limestone from upper Michigan and western Ohio. Coal or coke could move either via water or the New York Central, Pennsylvania, Baltimore & Ohio, Detroit & Toledo Shore Line and Detroit, Toledo & Ironton railroads, which serve the district. Within a hundred miles is probably the heaviest steel consuming territory in the world.

Almost across the Detroit river at Ojibway is the beginning of the great Canadian plant projected by the United States Steel Corp. Considering the outlet provided by the automotive industry, steel production at Detroit is small. The Ford Motor Co. with its two blast and ten open-hearth furnaces, is the largest producer. This project bears no relation to various proposals credited to General Motors Corp. to make its own pig iron and some of its finished steel in Michigan.

* * *

THIS is the season when visitors descend upon the automobile plants here. It is a tribute to producers that so many purchasers desire to see how their cars were made. On this basis, plus the general curiosity about all things Ford, the Ford Motor Co. draws the lion's share. It is not unusual for the impressario of the general reception room at Fordson to handle 2500 persons—the great bulk of them visitors—on a midsummer day. The daily average of visitors for the summer months is easily 1000. Mondays and Tuesdays are the heaviest days, while Friday usually is the lightest. Saturday is out, of course, because the 5-day week applies to visitors as well. No matter how great the press, the Ford company provides guides and transportation for all who want to make the 2-hour inspection trip. In addition, the purchasing department reception room at Fordson clears 250 to 300 persons daily.

* * *

GENERAL MOTORS CORP., unlike the Ford Motor Co., is not now a producer of iron and steel but its recent trend of expansion has unmistakably been vertical. Take the matter of castings. When new foundries and additions now under way are completed, which should be early in 1929, General Motors will have an aggregate capacity for melting 3400 to 3500 tons of iron daily. It is inevitable that castings work now farmed out will be recalled, with a consequent unhappy situation for the jobbing foundries. Fly wheels being so distinctly a specialty, it is presumed they will be the last part withdrawn.

Competition for General Motors casting business has been unusually sharp in recent months despite the uncertainty of it, and valuable economies have been developed by foundries seeking it. One foundry in particular was compelled to shave its price one-sixth to retain the contract for one part but has so revamped its operations as to make more money at the lower figure.

Ontario Steel Products Co., Toronto, Canada, reports for the year ended June 30 net profits of $122,340, as compared with $158,489 a year ago.

Machinery

Sales Unusually Active for Summer and August Demand Is Expected to Fall Little Short of July—Plant Expansion Aids Buying

SALES of machinery and equipment in August thus far indicate that the total business for the month will fall but little short of July. This will place equipment builders in a more favorable position, as regards operations, than for the past several summers. Metalworking plant expansion in the Middle West has been a factor in stimulating sales in that region. A. O. Smith Corp. in Milwaukee, and a tractor plant there for International Harvester Co. will require additional metalworking equipment.

Railroad buying is better than average for the season, but consists almost entirely of single installation purchases for replacement. Crane activity has been renewed after dullness of several weeks. Four cranes sold to Wyoming plant.

New York, Aug. 14.—A good amount of miscellaneous machine tool demand prevails, but with some of the exceptionally heavy buyers of the past several weeks, notably the Wright Aeronautical Corp., Paterson, N. J., and the General Electric Co., Schenectady, N. Y., fairly well covered on their requirements, appears likely that the total volume will fall short of last month. General Electric Co. still may be regarded as an active buyer, having closed on several machines within the past week for Schenectady.

Crane buying, exceedingly dull during the past two weeks, is showing slightly more life, but here, also it appears doubtful if this month's business will even equal the rather poor showing for July. Railroad buying of machine tools is featured by the placing of a few machines by the New York Central, including two turret lathes for its West Albany, N. Y., and Depew, N. Y., shops. Other railroad buying is indicated by the placing of a car wheel lathe with Niles Tool Works and two axle lathes reported placed with another builder. Niles Tool Works is reported to have booked a 40-foot boring mill for Allis-Chalmers Mfg. Co., Milwaukee.

Chicago, Aug. 14.—Machine tool buying this month is exceeding the most optimistic expectations. Indications are that the summer volume of business this year will be far ahead of the average. Scattered buying by small and large metalworking plants in the Chicago district formed a large part of the week's activity, but tractor manufacturers also made additional purchases. International Harvester Co. already has awarded the general contract for an addition to its tractor plant in Milwaukee, and it is understood will add to its Rock Island plant. The $80,000 list of tools for the new pipe shop of the A. O. Smith Corp., Milwaukee, is active.

Demand continues good in the Chicago district for punch press equipment, one dealer having closed on eight presses. Several lathes and radial drills also were bought. Santa Fe railroad purchased welding equipment and a cold saw, and Chicago & North Western purchased grinders and additional equipment. Santa Fe also is inquiring for a hydraulic spring bender, a frog and switch planer and several other tools. Chicago, Milwaukee, St. Paul & Pacific is to take bids on a hydraulic spring bender, and other spring shop equipment, including a spring tester. The latter road also is in the market for a turret lathe. Rock Island, in addition to the list of inquiries for a half dozen machines a week ago, is inquiring for a 4-foot radial drill. Chicago, Burlington & Quincy is asking bids on an 18-inch lathe. Missouri, Kansas & Texas has purchased flue shop equipment in St. Louis. Inquiry for used tools is fairly active.

Pittsburgh, Aug. 14.—Most machinery dealers are experiencing a comfortable day-to-day demand, although the usual summer lull in buying is in evidence. Westinghouse Electric & Mfg. Co. has continued to piece out its requirements, allocating orders on its third quarter list. Newest purchases include two milling machines to one dealer and three or four items to another. It has issued a supplementary list involving six or seven small drilling and milling machines, etc. One large supply house has received an award of eight or nine machines for a trade school in West Virginia, on which some woodworking equipment and considerable supplies are to be bought this week. Several other trade school lists are being worked up. The trade notes a tendency to close on items on which they started to work as far back as last April and sellers are confident of good fall demand. Cranes are quiet. Most pending machine tool inquiries call for one or two each.

Cleveland, Aug. 14.—Sales of machine tools and equipment in the past week reflect active industrial conditions throughout the Middle West. Manufacturers and distributors selling into districts outside of Cleveland proper report better business than those selling locally. From $30,000 to $35,000 of equipment has been purchased for Woodward high school, Toledo. The list includes 12 lathes, three shapers, three milling machines, one radial drill and two upright drills. The order was distributed widely, three different makers supplying the shapers, three the millers, and a larger number participating in the lathes.

Railroads are inactive in this district, New York Central bringing out a tool for inquiry occasionally, but the Nickel Plate is not purchasing. Large industrial companies also are not buying equipment.

August sales thus far have kept pace with July, an unusually good month. If September and October hold the present rate the last half of 1928 promises to be the best in several years. Several machine tool builders claim that their shops are the busiest since 1920.

Used tool sales are reflecting the activity in new equipment and are moving at a better rate.

CRANE ORDERS PLACED

Four overhead cranes for Monolith-Portland Cement Co., Laramie, Wyo., awarded through F. L. Smith & Co., 50 Church street, New York, to Northern Engineering Works; specifications call for 1.5-ton, 1-motor crane, 30-foot span; 2-ton, 1 motor, 29-foot span; 7-ton handpower, 15-foot, 6-inch span and a 5-ton handpower, 35-foot span.

100-ton electric overhead crane for Great Western Power Co., California, awarded through McClellan & Junkersfeld, 68 Trinity place, New York, to Shaw Crane Works; 25-ton pillar crane for William F. Kenny Corp. to Ohio Locomotive Crane Co.; 5-ton truck crane for Hart & Early Co., 18 East Forty-first street, New York, to Browning Crane Corp.; 15-ton crawler crane for Passaic Valley Sewer commission, Newark, N. J., to McMyler-Interstate Co.

Two cranes for Merritt, Chapman & Scott Corp., 17 Battery place, New York, a used 25-ton locomotive crane, reported to have been purchased from a Boston contractor and a new shovel crane from the Marion Steam Shovel Co.

Four electric overhead cranes for British-American Metals Co., Plainfield, N. J., to Niles Crane Corp.; all to be 5-ton capacity, 100-foot span.

Among single orders were: One 10-ton double 5-ton trolley crane for Carnegie Steel Co.'s warehouse at McCutcheon Mills, Pittsburgh, to Alliance Machine Co.; one 15-ton crane with 74-foot span for American Sheet & Tin Plate Co., Monessen, Pa., works to Cleveland Crane & Engineering Co.

CRANE ORDERS PENDING

10-ton electric crane, 18-foot span for laboratory at Lehigh university, Bethlehem, Pa.

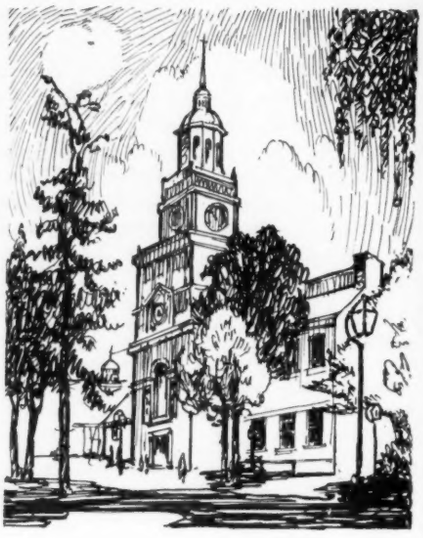
French Ore Output Up

Paris, July 24.—(*European Staff Service*)—Output of iron ore in France in May was greater than in April, and slightly under the record figure, in March. The following table gives comparisons in metric tons:

Mon. ave.	Production	Stocks at end of month
1913	1,826,500	.....
1925	2,943,204	.....
1926	3,269,033	.....
1927	3,723,200	.....
1928		
Jan.	4,122,386	2,668,569
Feb.	3,889,642	2,627,592
March	4,208,746	2,624,395
April	3,698,631	2,358,372
May	3,973,447	2,380,444

Announce Technical Papers for

STEEL TREATERS' Convention



NEARLY every phase of metallurgical research and practice will be covered in papers to be read at technical sessions of the American Society for Steel Treating during its annual convention in Philadelphia, Oct. 8-12. Leading authorities from the entire country in their particular branches of work will contribute this series of papers.

The National Metal exposition will be held this year in Commercial museum where the entire floor space of 80,000 square feet has been set aside for exhibits of manufacturers in metal using industries. Technical sessions of the American Society for Steel Treating will take place in the Benjamin Franklin hotel.

Concurrent with the metal exposition the fall meetings of the American Welding society and the institute of metals division of the American Institute of Mining and Metallurgical Engineers will be held at the Bellevue-Stratford and Benjamin-Franklin hotels respectively.

A tentative list of 37 papers for the various sessions of the steel treaters is as follows:

"Austenite Decomposition and Length Changes in Steel," by E. C. Bain, research department, United States Steel Corp., Carney, N. J., and Willis S. N. Waring, research laboratory, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"The Cutting Qualities of an Alloy Steel as Influenced by Its Heat Treatment," by O. W. Boston, director of engineering shops, University of Michigan, Ann Arbor, Mich., and M. N. Landis, Landis & Landis, Chicago.

"Metallurgical Problems of Transmission Gearing," by E. F. Davis, chief metallurgist, Warner Gear Co., Muncie, Ind.

"Methods of Approximating Certain Physical Characteristics of Nitrided Steel Cases," by G. M. Eaton, Molybdenum Corp. of America, Pittsburgh.

"The Equation of the Carbon Time Curve in Basic Open Hearth Refining and Prediction of Carbon Drop," by A. L. Feild, metallurgist, research laboratory, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Surface Cooling of Steels in Quenching," by H. J. French, senior metallurgist, G. S. Cook, associate physicist and T. E. Hamill, laboratory assistant, bureau of standards, Washington.

"High-Carbon, High-Chromium Steels," by J. P. Gill, metallurgist, Vanadium Alloys Steel Co., Latrobe, Pa.

"Some of the Characteristics of Pearlite in Eutectoid Rail Steels," by O. V. Greene, metallurgist, Reading Co., Reading, Pa.

"On Oxygen Dissolved in Steel and Its Influence on the Structure," by M. A. Grossmann metallurgical engineer, Central Alloy Steel Corp., Canton, O.

"The Solubility of Carbon in Normal and Abnormal Steels," by Dr. O. E. Harder, professor of metallurgy, University of Minnesota, Minneapolis, and Willard S. Johnson, research department, American Rolling Mill Co., Middletown, O.

"Cloudburst Process for Hardness Testing and Hardening," by Edward G. Herbert, Manchester, England.

"Deoxidation of Steel with Silicon," by C. H. Herty Jr., and G. R. Fitterer, associated with the bureau of mines, Pittsburgh.

"The Surface Hardening of Special Steels with Ammonia Gas Under Pressure," by Raymond H. Hobrock, engineering experiment station, Purdue university, Lafayette, Ind.

"On the Nature of Martensite Crystals," by Kotaro Honda, professor of metallurgy, Tohoku Imperial university, Sendai, Japan.

"The Influence of Nickel on Combined Carbon in Gray Iron," by J. R. Houston, metallurgist, Harnischfeger Corp., Milwaukee.

"A New Tool Material," by Dr. S. L. Hoyt, research laboratory, General Electric Co., Schenectady, N. Y.

"A New Method for Heat Treating High-Speed Steel," by H. C. Knerr, consulting metallurgist, Philadelphia.

"A Study of the Constitution of High-Manganese Steels," by V. N. Krivobok, bureau of metallurgical research, Carnegie Institute of Technology, Pittsburgh.

"An Investigation of the Physical Properties of Certain Chromium-Aluminum Steels," by F. B. Lounsberry, vice president, and W. R. Breeler, metallurgical department, Atlas Steel Corp., Dunkirk, N. Y.

"Depth and Character of Case Induced by Mixtures of Ferroalloys with Carburizing Compounds," by E. G. Mahin, professor of metallurgy, Notre Dame university, Notre Dame, Ind., and R. C. Spencer, metallurgist, Caterpillar Tractor Co., Moline, Ill.

"A Melting Record of Three Acid Open-Hearth Heats," by C. E. Meissner, development engineer, Chrome Steel Co., Carteret, N. J., and W. E. Griffith, research metallurgist, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Service Annealing of Sling and Crane Chains," by W. J. Merten, metallurgical engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Stainless Iron and Its Application to the Manufacture and Transportation of Nitric Acid," by W. M. Mitchell, assistant sales manager, development division, Central Alloy Steel Corp., Massillon, O.

"Progress Made in the Use of Electric Furnaces for Heat Treating," by A. N. Otis, General Electric Co., Schenectady, N. Y.

"Chromium-Copper Steels as Possible Noncorrosive Ferrous Alloys," by B. D. Saklatwalla, vice president, and A. W. Demler, metallurgist, Vanadium Corp. of America, Bridgeville, Pa.

"Graphitization in the Presence of Nickel," by H. A. Schwartz, manager of research, National Malleable & Steel Castings Co., Cleveland.

"Heat Treatment of High-Speed Steel to 2400 Degrees Fahr. in Molten Lead," by W. C. Searle, mechanical engineer, Leland Gifford Co., Putnam, Conn.

"Steel Failures in Aircraft," by F. T. Sisco, chief of metallurgical laboratory, Wright Field, Dayton, O.

"On the Equilibrium Diagram of the Iron Molybdenum System," by Takeshi Takei and Takejiro Murakami, professor of metallography, Tohoku Imperial university, Sendai, Japan.

"The Torsional Modulus of Carbon Steel, Phosphor Bronze, Brass and Monel Metal," by William P. Wood, associate professor of metallurgical engineering, University of Michigan, Ann Arbor, Mich.

"Decarburization of High-Carbon Steel in Reducing Atmospheres," by J. J. Curran, metallurgist, and J. H. G. Williams, metallurgical engineer, Henry Souther Engineering Co., Hartford, Conn.

"Application of Normalized Steels to Crankshafts and Other Automotive Parts," by H. T. Chandler.

"The Effect of Furnace Atmospheres on Steels," by R. G. Guthrie, metallurgist, Peoples Gas Light & Coke Co., Chicago.

"Chromium in Silicon Manganese Steels for Engineering and Structural Application," by A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Further Observations on the Microstructure of Martensite," by F. F. Lucas, technical staff member, Bell Telephone Laboratories, New York.

"A New Development in Corrosion-Resisting Steel," by Frank R. Palmer, metallurgist, Carpenter Steel Co., Reading, Pa.

"The Manufacture of Acid Open-Hearth Steel for the Production of Forging Ingots," by H. P. Rassbach, open-hearth department, Midvale Co., Philadelphia.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BRIDGEPORT, CONN.—Huntington Aircraft Corp., H. Huntington, president, manufacturer of airplanes, plans to build a 1 and 2-story manufacturing plant.

WATERBURY, CONN.—Bristol Co., manufacturer of recorders, has awarded the contract for a plant addition. (Noted Aug. 9).

BALTIMORE—Stieff Co., 17 North Liberty street, manufacturer of silverware and plated ware, has awarded the general contract for a 1-story plant addition to L. L. Chambers Inc., Roland avenue and Thirty-sixth street.

BOSTON—Terkelsen Machine Co., 326 A street, Cambridge, plans to build a 2-story plant addition. F. E. Leland, 238 Main street, Cambridge, is architect.

WORCESTER, MASS.—Worcester Gas Light Co. will build a new gas plant, including two carburetted water gas generating sets of 4,000,000 cubic feet daily capacity, fuel handling plant, power unit and gas-cleaning and purifying equipment. A compressing station will also be built, the new plants to be in operation the spring of 1929.

CARTERET, N. J.—U. S. Metals Refining Co. contemplates rebuilding its plant that was damaged in a recent fire.

NEWARK, N. J.—Sonatron Tube Co., 88 Eighth avenue, manufacturer of radio equipment, has awarded the general contract for a 4-story plant addition, 45 x 120 feet, to Drill Construction Co., 889 Broad street. (Noted May 24).

BROOKLYN, N. Y.—Roover's Bros. has been incorporated with $600,000 capital to manufacture and deal in tools, dies, etc., by Schechter & Lotsch, 12 East Forty-first street, New York, attorneys.

LACKAWANNA, N. Y.—Buffalo Tank Corp. has been incorporated with $100,000 in preferred shares and 2000 shares no par value stock to manufacture and deal in steel and galvanized tanks, etc., by Stanley & Gidley, Buffalo, attorneys.

NEW YORK—T. E. Conklin Brass & Copper Co., 54 Lafayette street, contemplates expansion and has leased property at 113 Leonard street.

NEW YORK—Property adjoining the plant of Charles Hvass & Co., 508 East Nineteenth street, has been purchased for future expansion of that concern.

NEW YORK—Electric Thermostat Corp. has been incorporated with 500 shares no par value to manufacture and deal in electrical devices, by Booth & Meleney, 74 Trinity place, attorneys.

NEW YORK—Rapid Machine Works has been incorporated with $10,000 capital by S. A. Hirshowitz, 11 East Forty-fourth street, attorney.

NEW YORK—F. L. Smidth & Co., 50 Church street, manufacturers of cement mill machinery, has awarded the general contract for a 1-story foundry building addition, 20 x 50 feet, and a 64-foot crane extension at Elizabeth, N. J., to Charles Flocken, 681 Newark avenue, Elizabeth. (Noted June 14).

CARLISLE, PA.—Carlisle Engineering Works has been incorporated with $50,000 capital to manufacture, design and deal in machinery, mill equipment, builders' supplies, etc., by Thomas McDonald, Carlisle.

EASTON, PA.—Hargun Co. has been incorporated with $5000 capital to manufacture and deal in metal products by H. W. McClintock, 902 Ridge street, Easton.

ERIE, PA.—Thermal Unit Co. of Pennsylvania has been incorporated with $10,000 capital to manufacture and deal in heat transfer apparatus, by W. L. Mack, Fourteenth and Walnut streets, Erie.

GREENSBURG, PA.—Keystone Coal & Coke Co. has awarded the contract for structural steel for coal tipples to Jones & Laughlin Steel Corp.

MILTON, PA.—Tex-Celain Corp. has been incorporated with $10,000 capital to manufacture and deal in machine parts, supplies, equipment, etc., by William E. Sallade, Turbotville, Pa.

PHILADELPHIA—Keystone Radiator Enclosure Co. has been incorporated with $10,000 capital to manufacture and deal in radiator enclosures, metal grill work, etc., by Samuel J. Livingston, 5010 North Twelfth street.

PHILADELPHIA—York Ice Machinery Corp. has placed a contract with Cramp & Co., Denckla building, Philadelphia, for a 3-story brick factory building here.

PHILADELPHIA—The Philadelphia Coke Co. will start work shortly on a unit at Richmond and Kennedy streets, with the Koppers Construction Co., Pittsburgh, in charge.

PHILADELPHIA—Reid Metal Refining Co. has been incorporated with $25,000 capital to mine, manufacture, refine and deal in metals of all kinds by James Reid, 4326 Longshore street, Philadelphia.

PHILADELPHIA—Automatic Appliances Inc. has been incorporated with 1000 shares no par value stock to manufacture and deal in machinery, tools, novelties, etc., by Lester C. Bosler, 269 West Rittenhouse street.

PHILADELPHIA—Wrought Iron Co. of America has been incorporated with 1000 shares no par value stock to manufacture and deal in wrought iron, cast iron, castings, etc., by J.

Resale Equipment News

BORDENTOWN STEEL & TUBE CO., Bordentown, N. J., will sell at auction Aug. 21 its entire machinery and equipment, that of a complete seamless steel tubing manufacturing plant. It includes a machine shop with lathes, shapers, hack saws and drill presses; hammer, alligator shear, 11 draw benches of 20,000 to 80,000 pounds capacity; tube straightening, cutoff and swaging machines; meters, chain hoists, dies and other equipment.

* * *

Surplus machinery, equipment and merchandise of the Kelly Springfield Truck & Bus Co., Springfield, O., will be sold Aug. 16 at auction. The sale will include 50 engine and turret lathes, 30 milling machines and gear cutters, 85 radial drills, cylindrical grinders and other tools, 60 motors of ½ to 75 horsepower, small tools and materials.

* * *

Sealed bids are being received until Aug. 17, in the office of Oscar L. Wolters, referee, Geele building, Sheboygan, Wis., on all of the assets of the Cedar Grove Stove Co., Cedar Grove, Sheboygan county, Wis., which was adjudicated bankrupt a short time ago. At the same time bids also will be taken on the assets of the Fort Coaster Co., Cedar Grove, an affiliated corporation also bankrupt. The assets consist of real estate, machinery, stock, etc. If no satisfactory bid is received, a public auction will be held to dispose of the assets. Frank J. Keli, Press building, Sheboygan, is trustee of the stove company, and Otto E. Marquardt, town of Sheboygan, of the coaster company.

Sales Calendar

Aug. 16—Auction sale of surplus machinery and equipment of Kelly Springfield Truck & Bus Co., Springfield, O.

Aug. 21—Auction sale of complete equipment of Bordentown Steel & Tube Co., Bordentown, N. J.

Aug. 22—Military reservation at Atlanta, Ga., by sealed bids.

Vernon Pimm, 281 Rhodes avenue, Haddonfield, N. J.

PHILADELPHIA—American Steel Engineering Co. has been incorporated with $125,000 capital to manufacture and fabricate structural and reinforcing steel by John H. Smith, 6619 Wayne avenue, Philadelphia.

PHILADELPHIA—Caskey Brass & Bronze Works Inc. has been incorporated with $25,000 capital to manufacture and deal in metals, by Wesley M. Caskey, Seventieth avenue and City Line, Philadelphia.

PHILADELPHIA—United Machines Corp. has been incorporated with $10,000 capital to manufacture, build and deal in cloth-cutting machines, sewing machines, pressing machines, etc., by Frank M. Cohen, 516 Greenwich street, Philadelphia.

PITTSBURGH—McClintic-Marshall Co., Oliver building, is inquiring for two 30-ton and four 9-ton overhead electric cranes.

PITTSBURGH—Altithermo Engineering Co. has been incorporated with $10,000 capital to manufacture and deal in machinery by John C. Neale, Sewickley, Pa.

PITTSBURGH—Laird Mfg. Co. has been incorporated with $5000 capital to manufacture and deal in automobiles and auto accessories and parts by Walter S. Laird, 1212 Farragut street.

PITTSBURGH—American Sheet & Tin Plate Co., Frick building, is inquiring for one 15-ton overhead crane at Monessen, Pa., and one 10-ton overhead crane at Farrell, Pa., M. S. Dennis, purchasing agent.

YORK, PA.—American Chain Co., purchaser recently of the Wright Mfg. Co., Lisbon, O., manufacturer of chain hoists, etc., plans to remove the latter company's machinery here where expansion will take place. The Wright company continues ownership of its plant and buildings and plans development of its foundry business after the removal of the chain division.

East Central

CHICAGO—American Forge Co., Blue island and Hoyne avenues, has awarded the structural steel contract for a plant to Gage Structural Steel Co.

CHICAGO—Wilson Steel Products, Forty-ninth street and Western avenue, will build a 1-story plant, 93 x 100 feet. Fred A. Fielder, 119 East Twenty-sixth street, is drawing plans.

CHICAGO—Aetna Industries Inc., 11 East Austin avenue, manufacturer of ornamental iron and metal products, has plans for expansion and has purchased a 1-story plant, 50 x 100 feet, at 2539 West Lake street.

CHICAGO—American Metals Tool & Equipment Co., 134 North La Salle street, has been incorporated with 1000 shares no par value stock to manufacture and deal in tools, automatic hammers, pumps, etc., by Frank Frandzel and Russell Alvarez.

CHICAGO—Pheoll Mfg. Co., 5700 West Roosevelt road, manufacturer of bolts, nuts and screws, has awarded the contract for a 1-story and basement addition, 100 x 300 feet, to Calumet Liberty-Way Construction Co., 9401 Stony Island avenue.

WEST HARVEY, ILL.—Pettigrew Foundry Co. is inquiring for a new sand mixer. F. R. Craig is president and general manager.

ANDERSON, IND.—Delco-Remy Corp., C. E. Wilson, general manager, plans to build a 5-story plant, 63 x 186 feet, on Columbus avenue.

ANN ARBOR, MICH.—Precision Products Co. has purchased the plant formerly occupied by the Michigan Furniture Co. The Precision company will manufacture radio sets.

BATTLE CREEK, MICH.—United Steel & Wire Co., H. J. Genebach president, has awarded the general contract for a warehouse, 2-story, to F. J. Skidmore, 59 Guest street.

CADILLAC, MICH.—Cadillac Malleable Iron Co. plans extensions and improvements to increase its output.

CADILLAC, MICH.—A new company is being organized by J. P. and George Wilcox, purchasers of the Cummer Mfg. Co. plant, for the manufacture of springs for automobile seats.

DETROIT—Linderme Machine Works, 3916 Vermont avenue, T. G. Linderme, purchasing agent, is inquiring for screw machines.

DETROIT—Higgins Brass Mfg. Co., 12534 Dequindre street, is inquiring for machinery and equipment for its new plant addition. (Noted Aug. 9).

DETROIT—Graham-Paige Motors Corp. has work under way on its plant expansion. At its Warren avenue plant here it is building two machine shop additions, each 80 x 505 feet, an addition to receiving building and other construction increasing its floor space. An addition, 100 x 140 feet, to its body plant at Wayne, Mich., is being built. Work has started on its Evansville, Ind., body plant. There will be ten building units, each 90 x 240 feet. (Noted Aug. 9).

DETROIT—Keller Tractor & Shovel Co., 2524 Broden avenue, has been incorporated with $300,000 capital to manufacture and deal in caterpillar tractors by Carl H. Keller, 5169 Martin.

DETROIT—Oldberg Mfg. Co., 2661 West Grand boulevard is inquiring for machinery and equipment for the manufacture of automobile parts for its proposed plant addition.

DETROIT—Detroit Casket Co., 2609 Hamilton avenue, L. H. Diehy president, plans to build a 1 and 2-story plant and boiler house, and will soon award the general contract. C. W. Brandt, 2111 Woodward avenue, is architect.

FLINT, MICH.—Fisher Body Corp. is going to build a storage building and pattern shop. H. E. Beyster, General Motors building, Detroit, is engineer for the Fisher corporation.

MENOMINEE, MICH.—Michigan and Wisconsin state highway departments awarded contracts for building interstate bridge over Menominee river between Menominee, Mich., and Marinette, Wis., as follows: Fabrication and furnishing structural steel, to Wisconsin Bridge & Iron Co., North Milwaukee, Wis.; grading approaches and drainage structures, to Connolly Contracting Co., St. Paul; erection of bridge, to C. R. Meyer & Sons Co., Oshkosh, Wis.

MONROE, Mich.—Wilder-Strong Implement Co., First and Kentucky streets, is inquiring for machine shop equipment for the manufacture of farm implements, for its proposed plant addition. (Noted May 31).

PONTIAC, MICH.—Oakland Motor Car Co. has a new sheet metal storage plant, 54 x 300 feet, under contruction.

PONTIAC, MICH.—Pontiac Pattern & Engineering Co. is inquiring for machinery and equipment for its proposed 1-story foundry, 75 x 80 feet. (Noted Aug. 9).

ALLIANCE, O.—Transue-Williams Steel Forgings Corp. has started on a plant enlargement program, and is working now on the installation of new equipment, including new hammers.

CINCINNATI—Chesapeake & Ohio railroad contemplates building an engine terminal here.

CINCINNATI—Ohio Valley Oxygen Co., 842 Kenyon street, F. B. Wilkinson president, plans to build a plant addition. J. G. Steinkamp, 1212 Mercantile Library building, is architect.

CINCINNATI—Chrysler Corp., Highland Park, Mich., contemplates building an assembly plant here. The site is not selected as yet.

CLEVELAND—Ohio Crank Shaft Co., 6600 Clement avenue, has awarded the general contract for a 1-story machine shop, 80 x 140 feet.

GALION, O.—Galion Iron Works & Mfg. Co. is inquiring for a 5 to 7-ton crane, 75 to 90-foot span.

PORTSMOUTH, O.—Portsmouth Auto Sheet Metal Works, H. W. Elliott, president, is inquiring for a power press, slotter, buffer, polisher, and other equipment for its new shop.

SPRINGFIELD, O.—E. E. Peters Machine Co. plans to build a new 1-story plant for the manufacture of an automobile starter, to include the parts and assembly departments.

SPRINGFIELD, O.—Springfield Metallic Casket Co., E. Lupfer president, plans to build an addition to its plant. Eastman & Budke, First National Bank building, are architects.

WEST JEFFERSON, O.—R. Gorham Auto Co. is inquiring for small lathe, valve grinder, etc., for a proposed 1-story garage, 50 x 100 feet.

MONTGOMERY, W. VA.—New River State School, industrial education department, is inquiring for a miller, grinder, hack saw, bench grinder, three lathes, etc.

KENOSHA, WIS.—Nash Motors Co. has purchased a 20-acre site for future expansion. In the deal, the Seaman Body Corp., jointly owned by Nash, acquired land a quarter-mile north of its present plant in Milwaukee. The Seaman plant manufactures all Nash enclosed bodiies.

MILWAUKEE—Gunderman Motor Sales Co., 399 Fifty-first avenue, West Allis, is building a 1-story addition, 40 x 60 feet, as an annex to its service and repair shop.

MILWAUKEE—J. Greenebaum Tanning Co., Hampton avenue, North Milwaukee, has purchased a 500-horsepower boiler from the Union Iron Works and stoking equipment from the Detroit Stoker Co. for replacements and enlargement of its power plant.

MILWAUKEE—Milwaukee Stamping Co., 300 Sixty-fourth avenue, West Allis, is erecting a power plant addition and has purchased a 150-horsepower boiler from the Milwaukee Reliance Boiler Works and an automatic stoker from the Detroit Stoker Co.

MILWAUKEE—Chas. A. Cahill & Sons, 214 Mason street, consulting engineers, have placed the following contracts for a central heating plant for the city of Wilber, Nebr.; two 150-horsepower boilers, Murray Iron Works, Burling-

ton, Iawo; Jones underfed stokers, Riley Stoker Corp., Chicago.

OSHKOSH, WIS.—Wisconsin Parts Co., 571 High street manufacturer of automobile, truck and gas coach axles, gears, etc., has started work on the construction of a 2-story office unit and a 1-story shop section to connect the office with the main shop. The office will be 40 x 70 feet. The additions are to be ready Oct. 1. At that time the space now used for office purposes will be added to the factory. Miscellaneous tools and other equipment are now being purchased. W. F. Rockwell is president and general manager.

PORTAGE, WIS.—Chicago, Milwaukee, St. Paul & Pacific railroad, 80 East Jackson boulevard, Chicago, has just started work on erection of new modern automatic coaling sheds to cost about $30,000.

SHEBOYGAN, WIS.—Gutsch Products Co., cereal products, will build a new power plant, 30 x 50 feet and has contracted with the Optenberg Iron Works, Sheboygan, for boiler equipment.

STEVENS POINT, WIS.—Minneapolis, St. Paul & Sault Ste. Marie railroad, First National Soo Line building, Minneapolis, has let general contract to Peppard & Fulton Co., for round house and turntable. A. E. Wallace, is vice president and general manager.

Southern States

GREENVILLE, MISS.—Greenville Motor Co. will build new garage and repair shop building, 50 x 170 feet, for automobile sale and repair.

BARTLESVILLE, OKLA.—Cities Service Gas Co. is enlarging compressor stations at Moreland, Okla., and Pampa, Tex., by addition of 1000-horsepower engine capacity. Two new 5000-horsepower compressor units are being added to stations at Higgins, Tex., and Corwin, Kans. All stations are on the 20-inch gas line from Pampa, Tex., to Wichita, Kans.

TULSA, OKLA.—Tulsa Airport Corp. plans to build a complete municipal airport to include hangars, shop facilities, air terminal building, meteorological office, etc. B. Russell Shaw Co. Inc., 810 Olive street, St. Louis, is architect.

SPARTANBURG, S. C.—Standard Looms Inc., Isaac Andrews, president, 519 East Main street, has completed plans for its new plant for the manufacture of looms and kindred machinery. Lockwood, Greene & Co., Charlotte, N. C., are engineers. (Noted July 12).

MEMPHIS, TENN.—F. L. Saino Mfg. Co., 66 West Colorado street, has increased its capital and plans plant expansion.

AMARILLO, TEX.—James T. Taylor, First National Bank building, Fort Worth, Tex., has been awarded contract by United States bureau of mines for helium plant construction. Chicago Bridge & Iron Works was given contract for water and gas tanks and C. & G. Cooper Co., Mt. Vernon, O., secured the compressor contract.

CORPUS CHRISTI, TEX.—Texas Airplane Corp., W. C. Maus, president, contemplates establishing a plant here.

CORSICANA, TEX.—Texas Power & Light Co. has been awarded contract for electrifying waterworks system of Corsicana. Hawley & Freese were consulting engineers.

DALLAS, TEX.—Crane Co., 836 South Michigan avenue, Chicago, plans to build a branch plant here, 1-story and basement. J. A. Pitzinger, 1101 S. W. Life building, is architect.

SAN ANTONIO, TEX.—Texas Neon Co., Milam building, plans to build a plant for the manufacture of electric signs.

TEXARKANA, TEX.—Lato Steel Mfg. Co. has been incorporated with $30,000 capital by J. M. Wadley and W. L. Woods Jr.

WACO, TEX.—Alamo Boiler & Iron Works, capital $10,000, has been incorporated by Fred Clark, S. M. Bunn and L. H. Boleman.

West Central

DES MOINES, IOWA—J. L. Mayer Co. has been incorporated with a capital of $35,000 to manufacture fire doors and other building specialties, by J. L. Mayer and Don G. Allen.

DES MOINES, IOWA—Penn Electric Switch Co. has been incorporated with $1,000,000 capital to manufacture electrical equipment. Albert Penn is president.

DES MOINES, IOWA—Des Moines Casket Co., 405 Southwest Eighth street, awarded general contract to Garmer-Stiles Co., for a 2-story plant, 100 x 145 feet, at Indiana avenue and Main street. John J. Sloan is president.

DE WITT, IOWA—Vasen Mfg. Co., manufacturer of novelties, Davenport, Iowa, will build a plant and install new machinery. George F. Vasen is president.

MARSHALLTOWN, IOWA—Mohr Mfg. Co., has been incorporated with $25,000 capital by Joseph M. Mohr and John Nolan Sr., to manufacture an electric door operator for garages, etc.

MONMOUTH, IOWA—Eastern Iowa Power Co. will build a 1-story 25-foot high hydro-electric plant, 26 x 52 feet, near Canton, with a capacity of 1375 kilowatt amperes. J. D. Wardle, Cedar Rapids, is the general manager.

TAMA, IOWA—Contract has been let to the Pittsburgh-Des Moines Steel Co. for a steel water tank on the Tama Indian reservation near Tama.

WATERLOO, IOWA—John Deere Tractor Co. has awarded general contracts for following: Power house, 1 story, 120 x 180 feet, to cost $50,000, and sand and oil storage building, 1 story, 100 x 420 feet, both let to H. A. Maine Construction Co.; foundry building, 1 story, 200 x 360 feet; core building, 1 story, 160 x 200 feet; mill building, 1 story, 120 x 400 feet, and a tractor testing building, 1 story, 120 x 160 feet; all let to Jens Olesen & Son Construction Co.; machine shop building, 6 stories, 100 x 260 feet, let to John G. Miller & Sons Construction Co. Allen H. Head is vice president and general manager.

DULUTH—Minnesota Power & Light Co. will build a 2-story warehouse at First street and Garfield avenue. C. S. Olson is manager.

Western States

LOS ANGELES—Mason Mfg. Co., 858 East Sixtieth street, manufacturer of floor lamps and shades, has awarded the contract for a 1-story plant, 120 x 233 feet.

LAUREL, MONT.—Northern Pacific railroad, St. Paul, has had plans completed for a shop building to cost $100,000. Complete equipment will be installed for making steel cars. O. M. Rogman, 1228 Railroad building, St. Paul, is the company architect.

NORTH BEND, OREG.—C. M. Clefton, secretary, Coal Products Co., announces that his company will build a coal reduction plant here. The company has a site on the water front where a concrete building, 60 x 600 feet, will be erected.

PORTLAND, OREG.—The plant of the Hesler Machine & Iron Works was damaged by a fire July 27.

PORTLAND, OREG.—Hardie Mfg. Co., 55 North Front street, manufacturer of spraying machinery, has awarded the general contract for a new 1-story plant to A. C. Teller Co., Worcester building.

SEATTLE—Northwest Lead Co., 1742 Fourth street, is inquiring for equipment for the manufacture of lead pipe, pig lead, bar lead, wire tubing, etc., for proposed extensions and improvements to its plant.

Canada

NIAGARA FALLS, ONT.—F. A. Dallyn, 71 King street west, Toronto, Ont., has prepared plans for a filtration plant and power

plant in Queen Victoria Park, Dufferin Islands, here, for the Niagara Falls water commission. Building to be reinforced concrete and stone construction.

OAKVILLE, ONT.—General Metal Devices Ltd., has awarded contract to W. W. King for the construction of a plant on Kerr street, to be 1 story, 60 x 300 feet, concrete block and steel construction. Blacklock Bros. have steel contract. Architect, R. Card, 142 Chester avenue, Toronto.

OSHAWA, ONT.—Canadian National Electric railroad, Toronto street, Toronto, Ont., has awarded contract to Bathe & McLelland, 17 Yonge street, for the construction of car barns, substation, etc., at North Oshawa freight terminal. Building to be 1-story, 115 x 212 feet, mill and brick construction.

PRESCOTT, ONT.—Architects of the dominion department of trade and commerce, Ottawa, are preparing plans in connection with a river terminal here, including a 5,000,000-bushel grain elevator. The terminal work also includes the construction of docks and dredging and straightening of channel. Canadian Pacific and Canadian National railroads will construct sidings and freight sheds.

TORONTO, ONT.—Canadian Hankscraft Ltd. has been incorporated to manufacture and deal in electrical appliances with $4000 capital by Donald C. Slichter, Alexander D. McKenzie, William A. MacRae and others.

TORONTO, ONT.—Randall & McKenzie Construction Co. Ltd., has been incorporated to carry on the business of general contractor and manufacturer of builder's material with $50,000 capital by James A. Boles, Paul Mageau, Greta O'Leary and others.

TORONTO, ONT.—Reversible Brake Beams Ltd. has been incorporated to carry on the business of brass and steel converter, iron founder, and manufacturer of tin plates with $250,000 capital by James B. Wardle, Stewart Goddard and Archibald Brake.

TORONTO, ONT.—Service Station Equipment Co. Ltd., 510 King street east, has awarded contracts in connection with new plant to be erected on Coxwell avenue, to be 1 story, 100 x 400 feet, steel and brick construction. Necessary machinery and tools will be purchased later.

TORONTO, ONT.—Dominion Bridge Co., Redford building, Bay street, has awarded contract to the Dickie Construction Co., 17 Wellington street, for the construction of an addition to its plant at 289 Sorauren avenue. Building to be 1 story, brick and steel construction.

WALKERVILLE, ONT.—General Motors Corp. of Canada will make several additions to its present plant, including a two-story office building, repair shop, and a drive-away building for the truck plant, to be completed this fall.

WELLAND, ONT.—High School board, A. B. McLean chairman, is asking for prices, catalogs, etc., on lathes, etc., for vocational training shop for proposed school.

DIXVILLE, QUE.—Plans are being prepared for a dam and power plant to be built here on the Coaticook river for Desrochers & Normandin, Coaticook, Que. Engineer, A. C. Crepeau, 30 Wellington street north, Sherbrooke, Que.

MAGOG, QUE.—Town council, Alfred Tourigny, secretary-treasurer, will make repairs, replacements and additions to hydroelectric power plant on the Magog river. Trotter & Gate, 1111 Beaver Hall Hill, Montreal, Que., are engineers.

MONTREAL, QUE.—Ellams Duplicators Co. of Canada Ltd. has been incorporated to manufacture duplicators and accessories with $10,000 capital by Shirley G. Dixon, David M. Johnson, William H. Wilson and others.

MONTREAL, QUE.—Canada Power Washing Machines has been incorporated to manufacture and deal in washing machines and accessories, with $50,000 capital by Auguste Mathieu, Edward M. Macdonald, and George Noel.

MONTREAL, QUE.—Marvelheat Ltd. has been incorporated to manufacture and deal in radiators, boilers and heater, with $50,000 capital and 20,000 shares no par value stock by Renee Chenevert, Harry Batshaw and Joseph Hedal.

MONTREAL, QUE.—D. L. Alexander Diamond Drilling Co. Ltd. has been incorporated to manufacture and deal in diamond drills and parts, with $49,000 capital, by Douglas L. Alexander, Paul Duquette and Wallace R. Henry and others.

QUEBEC, QUE.—Bids are being received until Aug. 20, by F. X. Chouinard for the supply of turbine electric pumps for waterworks plant.

QUEBEC, QUE.—Bids will be received by city clerk, city hall, until Aug. 20 for pumping unit to be installed at waterworks plant. J. A. Tremblay is waterworks engineer.

THREE RIVERS, QUE.—North Shore Power Co. Ltd., Des Forges street, proposes to build an addition to its plant on St. Maurice street.

New Trade Publications

MOTORS—Century Electric Co., 1806 Pine street, St. Louis, has issued a 4-page bulletin describing its line of direct current motors.

FIRE BRICK—Ironton Fire Brick Co., Ironton, O., has issued a series of folders giving information on the manufacture and use of fire brick.

AIR COMPRESSORS—Angle compound air compressors are described and illustrated in a recent bulletin of the Sullivan Machinery Co., 122 South Michigan avenue, Chicago.

CORE MACHINES—A folder recently issued by the Osborn Mfg. Co., 5401 Hamilton avenue, Cleveland, describes its rollover type core machine, which has been designed to handle a wide range of cores.

OVENS—A bulletin issued by the Nichols Products Corp., 33 West Forty-second street, New York, gives information on industrial oven heating and describes the direct fired oil and gas heaters manufactured by the company.

CENTRIFUGAL PUMPS—Ingersoll-Rand Co., 11 Broadway, New York, recently has issued an interesting and well illustrated catalog describing its line of multi-stage centrifugal pumps designed for high pressure boiler service, hydraulic service, mine drainage, pipe lines, etc.

FLUX—Mathieson Alkali Works, Inc., 250 Park avenue, New York, has issued three bulletins dealing with various uses of its special flux in cupola practice, in desulphurizing by adding it to cast iron in the ladle and in brass melting.

COMPRESSORS—Spencer Turbine Co., 521 North Park avenue, Hartford, Conn., has issued an 8-page folder illustrating and describing its line of turbine compressors designed for use with foundry cupolas. Features of design are pointed out and a table is included giving capacities.

STEEL ABRASIVES—American Steel Abrasive Co., Galion, O., has published a booklet giving information on steel abrasives and illustrating a method which is used to test steel shot to determine if the hardness is up to the company's standard.

SAND SLINGING MACHINES—A booklet containing a series of water-color drawings by E. B. Kellogg recently has been issued by the Beardsley & Piper Co., 2541 North Keeler avenue, Chicago. These drawings illustrate the use of the sand slinging machines in various types of foundries.

COMPRESSORS AND VACUUM PUMPS—Ingersoll-Rand Co., 11 Broadway, New York, has issued a 44-page bulletin describing its small and intermediate sized compressors and vacuum pumps. The compressors are supplied for handling either air or gas and are of the straight-line type, built as single stage, two-stage or three-stage units. Many illustrations are used.

HOISTS—Chisholm-Moore Hoist Corp., division of the Columbus McKinnon Chain Co., Cleveland, has issued an 8-page folder giving information on various types of hoists which it manufactures. Products listed include a new type of differential hoist, a high-speed ball bearing hoist, a standard screw hoist, trolleys, electric hoists, track hangers and sling chains.

MAGNETIC PULLEYS—A 16-page bulletin has been issued by the Magnetic Mfg. Co., Milwaukee, describing magnetic pulleys and magnetic pulley separators. The bulletin points to the application of the magnetic pulley and the apron conveyor magnet as a simple and practical means for magnetic separation. The publication is well illustrated with reproductions of photographs of various types of separators.

AIR FILTERS—A 22-page catalog has been issued by the Staynew Filters Corp., Rochester, N. Y., describing its line of air filters for industrial use. These filters are designed for a variety of uses, such as filtering air for air compressors, electric motors, paint spray outfits, compressed air pipe lines, etc. Numerous illustrations show installation and details of construction of this equipment. A list of industrial users also is included.

FLEXILE SHAFT EQUIPMENT—Catalog No. 21, issued by the N. A. Strand & Co., 5001-5009 North Lincoln street, Chicago, gives information on the complete line of products manufactured by the company. The flexible shaft equipment used for grinding, polishing, buffing, match brushing, rotary filing, sanding, drilling, and reaming, is discussed. Illustrations show various types of equipment and numerous illustrations.

CUTTING AND WELDING EQUIPMENT—Oxweld Acetylene Co., Carbide & Carbon building, New York, has published a catalog describing the various pieces of equipment used in oxy-acetylene cutting and welding. Included are numerous types of blow pipes, cutting nozzles, portable welding and cutting units and a low pressure type acetylene generator. The catalog is well illustrated with reproductions of photographs. Specifications of all items are included.

Gisholt Selects Timkens for High Production

They call it the Gisholt "1L" High Production Turret Lathe. In machine tools today high production very generally means Timken-equipped. This latest Gisholt has Timken Bearings on the drive shaft, intermediate shaft and reverse shaft, and on the spindle itself.

Thus Gisholt puts its seal on the fact that utmost production, precision, rigidity and endurance are made possible by Timken full thrust-radial capacity, greater load carrying area, and excellent anti-friction properties. Timkens not only reduce operating and maintenance costs, but help to improve the character of the output and the production totals.

Timkens help to keep machine tools perfect, fast, and economical for many extra years—because Timkens combine Timken tapered construction, Timken *POSITIVELY ALIGNED ROLLS*, and Timken-made electric steel.

THE TIMKEN ROLLER BEARING CO.
C A N T O N , O H I O

TIMKEN
Tapered
ROLLER BEARINGS

European Iron and Steel Statistics

Gross Tons

Pig Iron Production

Monthly Average	United Kingdom	France	Belgium	Luxemburg	Germany*
1912	729,000	405,000	192,000	184,800	1,279,200
1913	855,000	427,200	203,800	209,000	1,374,400
1921	218,000	280,300	71,800	79,600	643,200
1922	408,500	428,900	132,300	138,200	770,500
1923	620,000	445,600	179,100	115,400	404,700
1924	609,000	631,100	230,300	177,000	640,500
1925	521,800	696,800	208,500	192,300	834,500
1926	203,500	770,500	278,800	206,100	791,000
		1927			
January	434,600	792,400	311,500	224,100	1,044,600
February	571,100	705,100	288,000	204,500	953,600
March	671,800	788,500	309,400	226,200	1,068,900
April	680,000	761,800	305,100	221,000	1,035,400
May	720,100	781,800	314,000	233,900	1,112,100
June	651,300	735,000	297,300	220,300	1,050,900
July	645,800	757,100	314,700	221,700	1,091,600
August	596,100	761,400	311,700	234,500	1,098,100
September	591,500	749,500	304,000	225,500	1,087,400
October	596,300	782,600	317,200	226,600	1,121,600
November	575,900	750,100	308,200	217,800	1,101,900
December	559,100	783,600	311,900	224,600	1,131,700
		1928			
January	560,500	796,400	309,700	226,000	1,162,100
February	550,800	772,100	297,300	216,700	1,104,800
March	592,600	845,000	321,400	236,500	1,152,200
April	563,100	821,100	313,220	223,400	1,029,100
May	591,500	871,000	328,810	233,806	1,027,700
June	563,700	.....	.....	.....	.....

Ingots and Castings Production

Monthly Average	United Kingdom	France	Belgium	Luxemburg	Germany*
1912	566,000	363,000	206,000	79,400	1,339,600
1913	638,600	384,500	202,300	109,000	1,445,700
1921	308,600	254,500	62,800	61,900	819,700
1922	490,100	372,000	128,400	114,300	960,500
1923	706,800	419,100	186,200	98,300	517,000
1924	685,100	566,000	234,700	154,300	806,500
1925	615,500	608,300	197,700	170,800	1,000,000
1926	296,700	687,900	276,800	184,100	1,012,500
		1927			
January	730,700	662,900	315,700	192,300	1,288,500
February	826,800	618,200	292,200	181,300	1,214,300
March	949,600	692,900	309,700	199,800	1,393,600
April	850,100	669,900	296,400	202,800	1,269,100
May	884,600	700,800	316,100	206,900	1,356,200
June	747,300	661,400	295,100	200,000	1,307,200
July	687,100	666,300	309,200	199,800	1,341,100
August	643,100	683,200	320,600	212,500	1,409,700
September	777,000	682,400	285,400	209,600	1,353,600
October	699,000	711,600	307,200	211,800	1,392,300
November	698,700	671,300	305,200	204,200	1,380,000
December	604,900	723,500	305,900	210,500	1,351,100
		1928			
January	626,200	738,300	310,700	209,600	1,446,500
February	764,400	726,500	305,600	201,900	1,301,300
March	793,300	791,400	321,600	216,900	1,398,200
April	644,100	726,500	300,300	199,400	1,143,300
May	752,700	794,000	325,160	214,756	.....
June	709,500	.....	.....	.....	.....

*German pre-war boundaries for 1912 and 1913; from 1919 he figures do not include the Saar district returns.

Imports

	United Kingdom	France	Belgium and† Luxemburg	Germany*
Average monthly 1912	166,400	16,400	87,000	27,300
Average monthly 1913	185,900	14,100	72,900	25,000
Average monthly 1921	136,700	41,300	43,300	54,000
Average monthly 1922	73,500	63,300	47,700	152,300
Average monthly 1923	110,200	58,500	43,700	145,000
Average monthly 1924	202,400	57,100	46,800	160,000
Average monthly 1925	226,700	14,100	44,500	98,400
Average monthly 1926	311,700	14,200	50,200	86,500
	1927			
January	555,500	7,900	45,800	129,500
February	443,400	10,100	36,800	143,400
March	478,100	10,500	54,000	129,800
April	404,700	12,000	47,300	200,000
May	355,900	15,100	47,500	186,400
June	332,600	14,100	56,300	186,300
July	336,300	12,000	52,700	189,000
August	286,300	9,900	63,400	211,300
September	312,000	6,900	50,000	210,900
October	336,000	8,100	68,000	232,800
November	284,800	8,200	57,800	223,900
December	280,500	11,400	59,800	190,100
	1928			
January	283,900	6,000	65,000	200,800
February	286,900	10,100	72,000	179,600
March	271,500	18,000	70,200	187,700
April	252,700	13,212	61,700	189,100
May	236,900	.....	.....	186,450
June	210,405	.....	.....	.....

*Luxemburg is included with Germany in 1912 and 1913.

Exports

	United Kingdom	Belgium and† France	Luxemburg	Germany*
Average monthly 1912	400,600	41,500	124,500	482,400
Average monthly 1913	414,100	51,600	129,200	517,300
Average monthly 1921	141,400	133,800	75,600	160,000
Average monthly 1922	283,400	161,400	175,900	209,700
Average monthly 1923	360,000	181,900	207,900	110,000
Average monthly 1924	321,100	231,100	282,200	130,000
Average monthly 1925	310,900	321,700	262,800	267,600
Average monthly 1926	249,000	343,800	308,900	402,000
	1927			
January	219,400	463,300	345,900	478,400
February	251,700	480,600	364,500	352,900
March	353,000	472,700	415,000	374,100
April	334,500	519,100	383,800	344,300
May	422,400	461,900	364,800	344,300
June	366,100	432,900	351,300	307,600
July	389,600	454,600	375,700	340,600
August	342,400	465,800	426,700	333,200
September	384,900	453,600	357,100	346,800
October	384,800	508,400	372,900	340,700
November	399,100	449,300	392,900	326,800
December	381,800	440,300	456,300	340,600
	1928			
January	332,200	408,100	274,600	363,026
February	317,000	452,900	395,500	390,776
March	409,300	443,500	453,100	334,798
April	344,300	366,202	323,600	412,810
May	359,000	.....	.....	398,470
June	365,890	.....	.....	.....

†Luxemburg included with Belgium from 1922 onward.

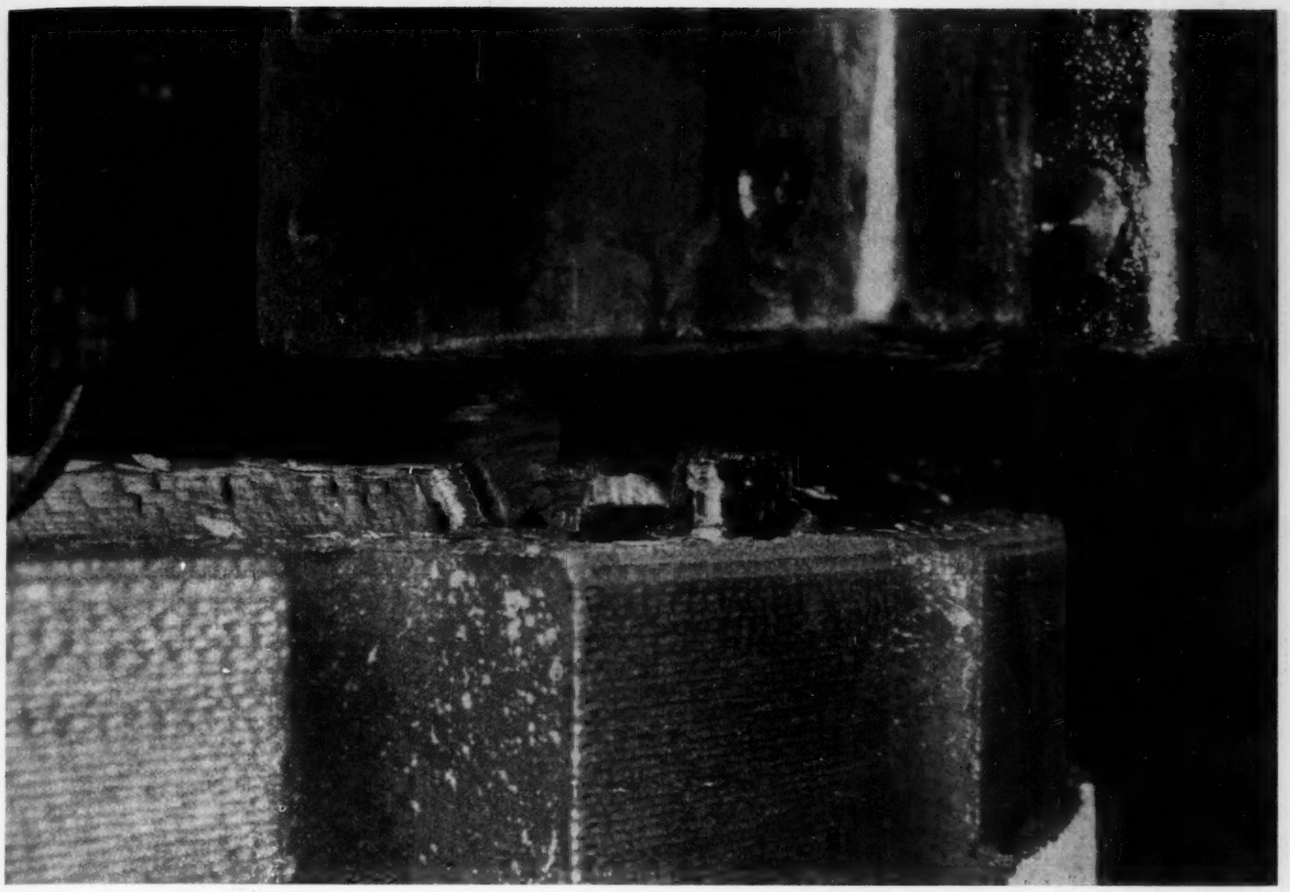
American Iron and Steel Exports, Imports

Gross Tons

	Imports	Exports
1928		
January	58,635	205,766
February	47,628	185,915
March	74,128	221,935
April	72,329	215,184
May	72,106	267,890
1927		
January	63,404	215,235
February	49,451	166,128
March	61,872	171,094
April	60,374	192,339
May	79,814	202,708
June	69,017	184,364
July	61,112	190,502
August	68,386	175,636
September	58,464	166,352
October	52,503	170,255
November	61,882	177,928
December	64,188	168,428
Total	750,467	2,180,969
1926		
January	79,067	174,585
February	100,213	157,187
March	93,107	169,438
April	107,636	194,449
May	108,731	173,418
June	124,215	159,506
July	82,411	194,717
August	91,578	171,588
September	85,484	182,071
October	81,830	172,070
November	81,259	219,830
December	75,559	198,189
Total	1,111,090	2,167,048
1925		
January	77,065	141,714
February	92,380	102,302
March	92,110	155,386
April	71,249	155,426
May	68,117	150,612
June	83,330	136,847
July	64,642	138,670
August	68,489	188,963
September	68,445	136,754
October	80,163	141,817
November	79,771	171,134
December	98,400	142,209
Total	943,240	1,762,571

Yearly Totals

1924	556,281	1,805,064
1923	734,734	2,009,141
1922	712,895	2,005,100
1921	135,825	2,150,276
1920	421,274	4,934,087
1919	322,264	4,397,295
1918	169,110	5,338,019
1917	330,301	6,465,053
1916	328,965	6,110,732
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	510,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,011,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	1,103,664
1901	221,297	700,852
1900	209,955	1,154,284



Where money can be made or lost

The profit on a machining operation depends on the speed with which metal can be removed; and that depends to a great extent on the quality of the steel of which the tools are made. The best machine with the most skilful operator cannot give maximum production if the tool steel has not had the stamina worked into it to enable it to stand up under severe punishment.

Bethlehem has for many years made fine tool steels for every kind of work. At every step of manufacture Bethlehem Tool Steels are subjected to critical inspection; and each grade of steel is continually checked and tested through use in Bethlehem's own mills and shops, on work similar to that for which it is offered to customers. As a result, when Bethlehem recommends a grade of tool steel for a specific service you can implicitly rely on that steel to do the work satisfactorily.

From among the many grades of Bethlehem Tool Steel you can select one that will exactly suit each of your requirements. Bethlehem metallurgists will gladly assist you in making your selection.

BETHLEHEM STEEL COMPANY, *General Offices:* BETHLEHEM, PA.

DISTRICT OFFICES

New York Boston Philadelphia Baltimore Washington Atlanta Pittsburgh Buffalo Cleveland
Detroit Cincinnatti Chicago St. Louis San Francisco Los Angeles Seattle Portland Honolulu

Bethlehem Steel Export Corporation, 25 Broadway, New York City, Sole Exporter of our Commercial Products

BETHLEHEM TOOL STEELS

Discounts and Extras

Steel Pipe

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	45	19½
¼ and ⅜-inch	51	25½
½-inch	56	42½
¾-inch	60	48½
1 to 3-inch	62	50½
Lap Weld		
2-inch	55	43½
2½ to 6-inch	59	47½
7 to 8-inch	56	43½
9 and 10-inch	54	41½
11 and 12-inch	53	40½
REAMED AND DRIFTED		
Butt Weld		
1 to 3-inch	60	48½
Lap Weld		
2-inch	53	41½
2½ to 6-inch	57	45½
EXTRA STRONG—PLAIN ENDS		
Butt Weld		
⅛-inch	41	24½
¼ and ⅜-inch	47	30½
½-inch	53	42½
¾-inch	58	47½
1 to 1½-inch	60	49½
2 to 3-inch	61	50½
Lap Weld		
2-inch	53	42½
2½ to 4-inch	57	46½
4½ to 6-inch	56	45½
7 to 8-inch	52	39½
9 and 10-inch	45	32½
11 and 12-inch	44	31½
DOUBLE EXTRA STRONG		
Butt Weld		
½-inch	42	32½
¾ to 1½-inch	45	35½
2 to 2½-inch	47	37½
Lap Weld		
2-inch	41	32½
2½ to 4-inch	43	34½
4½ to 6-inch	42	33½
7 to 8-inch	38	25½

(Note—Large jobbers obtain additional preferential discounts of 1 and 5 on black and 1½ and 5 on galvanized. Extra 5 per cent granted in the 4th quarter 1927 and 1st quarter 1928 discontinued April 2, 1928.)

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld		
⅛ and ¼-inch	+11	+39
⅜-inch	22	2
½-inch	28	11
¾-inch	30	13
Lap Weld		
1¼ and 1½-inch	Upon application	
2-inch	23	7
2½ to 3-inch	26	11
3 to 6-inch	28	13
7 to 12-inch	26	11
PLUGGED AND REAMED		
Two points less than above		
EXTRA STRONG, PLAIN ENDS		
⅛ and ¼-inch	+19	+54
⅜-inch	21	7
½-inch	28	12
¾-inch	30	14
Lap Weld		
2-inch	23	9
2½ to 4-inch	29	15
4½ to 6-inch	28	14
7 to 8-inch	21	7
9 to 12-inch	16	2

DOUBLE EXTRA STRONG

Butt Weld		
½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39
Lap Weld		
2 and 2½-inch	+13	+25
3 and 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

(Note—Large jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized.)

Boiler Tubes

Pittsburgh carload discounts. Less carloads 4 points less

STEEL (Lap Weld)

2 and 2¼-inch	27 off
2½ and 2¾-inch	37 off
3-inch	40 off
3¼ to 3¾-inch	42½ off
4 to 13-inch	46 off

(Note—Additional discounts of seven extra 5 per cents now being given on 21,000 pounds or more.)

CHARCOAL IRON

1½-inch	+18
1¾-inch	+ 8
2 and 2¼-inch	2 off
2½ to 3-inch	7 off
3¼ to 4½-inch	9 off

(Note—Additional discounts of two 10's and one 2½ now being given on 12,000 pounds or more.)

SEAMLESS COLD DRAWN

1-inch	63 off
1¼ and 1½-inch	55 off
1¾-inch	39 off
2 and 2¼-inch	34 off
2½ and 2¾-inch	42 off
3-inch	48 off
3¼ and 3½-inch	50 off
4-inch	53 off
4½, 5 and 6-inch	45 off

SEAMLESS HOT ROLLED

2 and 2½-inch	40 off
2½ and 2¾-inch	48 off
3-inch	52 off
3¼ and 3½-inch	56 off
4-inch	59 off
4½, 5 and 6-inch	48 off

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add $8 per ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....50 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Net prices per foot f.o.b. Pittsburgh Gage	Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅝-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, dated Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge, (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weigh—

Over 100 inches to and including 110 inches	.05c
Over 110 inches to and including 115 inches	.10c
Over 115 inches to and including 120 inches	.15c
Over 120 inches to and including 125 inches	.25c
Over 125 inches to and including 128 inches	.50c
Plates less than ¼-inch or lighter than 11 pounds per square foot.	
Over 72 inches to and including 84 inches	.10c
Over 84 inches to and including 96 inches	.20c
Over 96 inches to and including 100 inches	.30c
Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.	

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds per square foot ..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds per square foot ..... .20c

Plates ordered 7.65 pounds per square foot ..... .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. Navy Dept. or equivalent specifications	1.00c
Boiler steel subject to U. S. Navy Dept. specifications, classes A and B	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Checkered plates 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Five feet and over up to published limit of length, but not over 80 feet	No extra
Under 5 feet to 3 feet inclusive	.10c
Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.10c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts. (Including straight taper plates)

Additional extra ..... .10c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c